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THE IRON AGE

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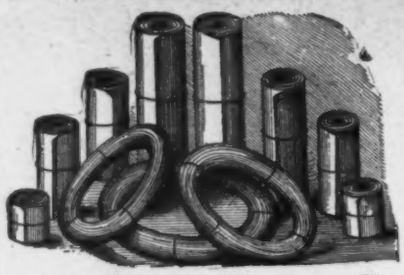

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THE IRON AGE

THURSDAY, FEBRUARY 7, 1901.

The Hardening and Tempering Plant of J. H. Williams & Co.

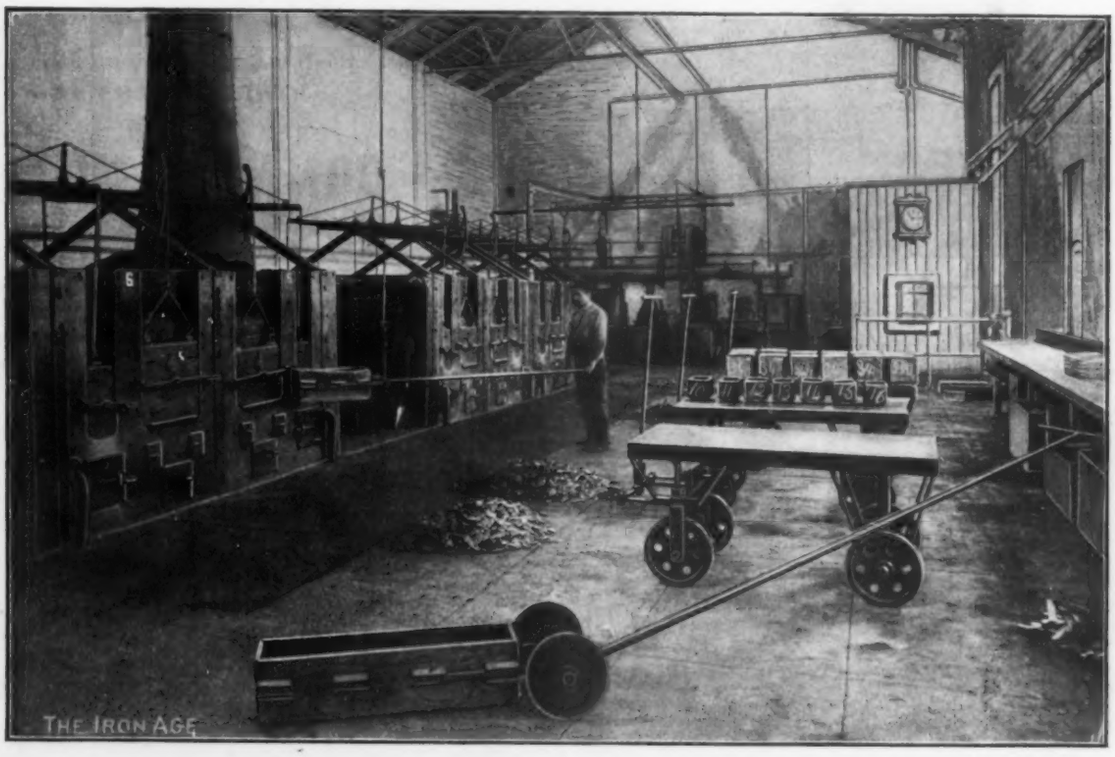
A fine perceptive faculty, as far as color is concerned, is no longer a prerequisite qualification of the one who would undertake the hardening and tempering of steel. Dull red, straw, cherry red, and so on, have seen their day and generation and been retired to the shelf to receive the sympathy of other processes whose field of operation has been invaded by advanced ideas. No longer is it necessary to have the work done in a twilight shop in order that gradations of color may be perceived. The harmony of the forge, with its warm tone and gray tone, its light shades and dark shades, has disappeared.

That picturesque individual in blacksmith garb who has been "40 years right at that forge," who is the only one in the establishment who can temper steel, has toppled from his pedestal and joined the ranks of the non-essentials. He never could explain why and how he did his work. When he thought the piece had been heated sufficiently he cooled it. As a teacher of the secrets of his trade he was never very successful. His work was always enveloped in dust, dirt and mystery, and he did all he could to keep these attributes in conspicuous evidence.

But the days of rule of thumb have departed and an era of exact methods, founded upon fact and executed with certainty, has dawned. The hardening and tempering of steel no longer depend upon the experience and idiosyncrasy of the man. The personal factor no longer enters the problem. Appliances are now provided which are handled in accordance with rules founded upon scientific facts and the results desired are, therefore, assured. At all the critical stages in the operation the conditions are known with certainty. The furnace—the forge fire is now on the shelf alongside the other obsoletes—is so designed that any required degree of heat can be maintained indefinitely and with accuracy. The pyrometer has replaced the color scheme, and with its aid the workman knows precisely with what temperature he is dealing.

The most important results which have accompanied the new methods are the known condition of the tempered piece, its exact degree of hardness and the most material reduction in the percentage of failures. With a given quality of steel it is possible to produce, and to produce time and again, any degree of hardness called for. Steels of different composition can be so manipulated as to produce results of unvarying uniformity.

In the good old days when the blacksmith had charge of the operations he might or he might not crack a costly die while in his hands. He might or might not produce the desired result, but he could not duplicate results indefinitely. The loss side of the account, especially in the handling of expensive die work, was one of the most essential items in the entire business, both because of its uncertainty, and because of the direct loss involved. A die upon which work to the value of $50 or $100 had been expended might be cracked in hardening, but there was no remedy. It was merely charged up to profit and loss. As said before, all these things have now been done away with.



THE HARDENING AND TEMPERING PLANT OF J. H. WILLIAMS & CO.

An Up to Date Tempering and Hardening Plant.

Through the courtesy of J. H. Williams & Co. of Brooklyn, N. Y., we are permitted to present the following description of their new hardening and tempering equipment, the perfection of which serves to bear out the statements made in the opening paragraphs.

The work here done consists largely of dies of an expensive character, intricate in design and execution and which require careful handling in the tempering department. They also produce a great variety of drop forgings and certain toothed appliances, such as the jaws of pipe wrenches, all of which must be treated in

their individual characters, or as we might say, by themselves, since each requires a treatment different from the other.

The success of the method pursued has been fully demonstrated, both as regards the quality of the product and the lessened cost of production, as compared with work done under the old system.

The building is a brick structure with a steel trussed roof, as shown in Figs. 4 and 5. It measures 34 x 98 feet inside and is lighted throughout its entire length by a monitor roof 9 feet in width and provided with swinging sashes. Extending along one side of the room are the groups of Brown & Sharpe case hardening and annealing furnaces, located as indicated in Fig. 5. There are six case hardening furnaces arranged in pairs, with one pair of large annealing furnaces. To the right of these are grouped the oil tempering furnaces, water tanks, soda kettle and lead hardening furnaces.

To the extreme left, Fig. 2, is a large tank in which small articles from the different furnaces are dropped. The steam and dirt arising from the quenching of the pieces are removed through a suitable stack.

In a small room in one corner are the several expanded metal lockers for the men, closet, hot and cold water shower bath and sink, this room being provided with all the conveniences needed for the cleanliness of the men. In the corner opposite this and nearest the entrance is the office.

The furnaces will be understood in design and construction from the engravings, Figs. 6, 7, 8 and 9, and also from the several photographs.

In the center of the group of furnaces is a stack, 65 feet high by 3 feet in diameter, the flues of which lead

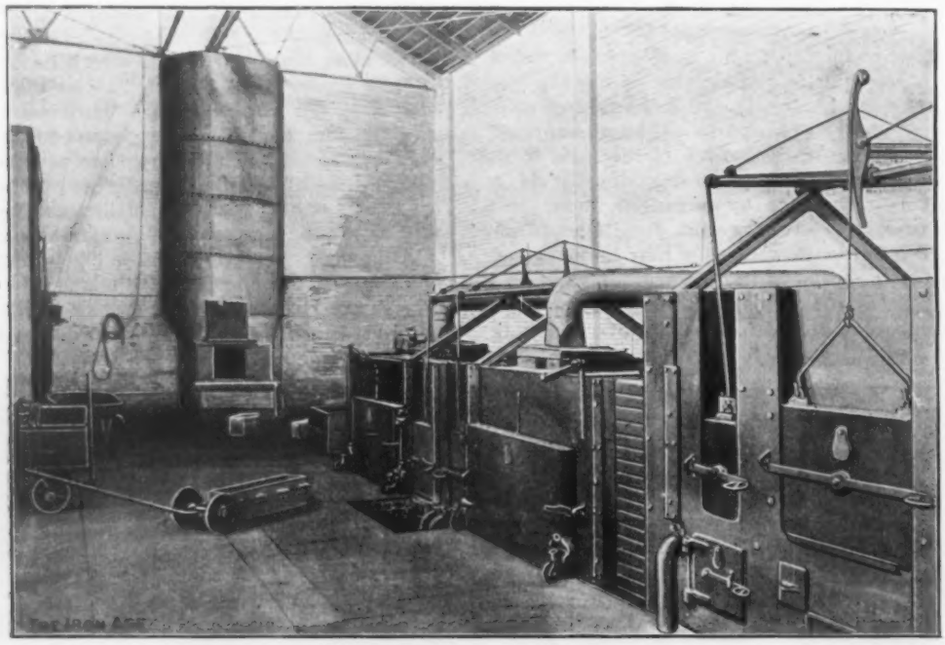


Fig. 2.—Annealing Furnaces and Quenching Tank.

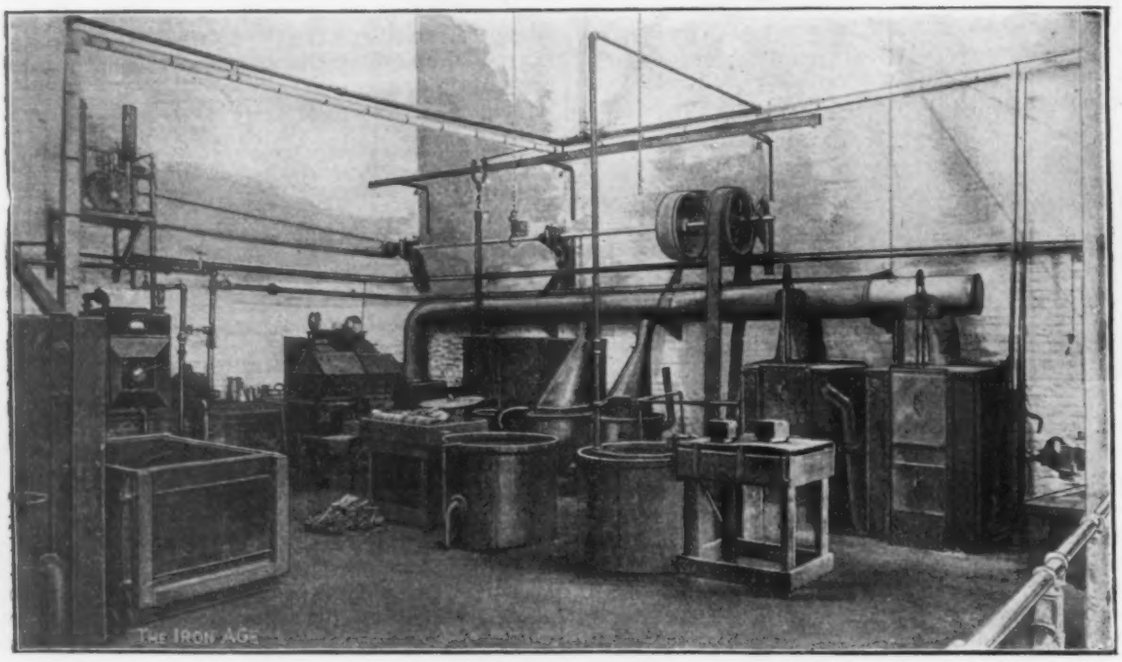


Fig. 3.—Small Hardening and Tempering Furnaces.

THE HARDENING AND TEMPERING PLANT OF J. H. WILLIAMS & CO.

to each one of the furnaces, as indicated on the plan view. All the furnaces are fired with hard coal.

The floor of the room is cemented, with the exception of about 8 feet extending along the front of the furnaces, which is of cast iron plates.

Hardening Dies.

The dies according to their size are packed in cast iron boxes, completely surrounded with bone. Each box

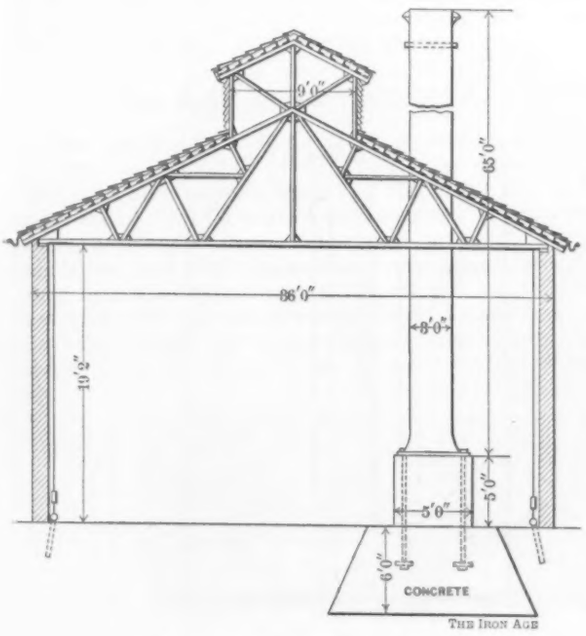


Fig. 4.—Cross Section of Building.

is covered with a cast iron plate, which is not luted with clay, except where unusually hard metal is desired.

For this work the furnace is usually heated to about 1150 degrees, the temperature being ascertained by means of a Zaubitz pyrometer. From two and one-half to four and one-half hours are required to heat the charge through and through, the time depending upon the size of the die.

The die is then removed from the box and taken to the hardening trough or tank, Figs. 3 and 5, where it is turned face down on a gridiron placed near the top of the tank. A large stream of pure water is then forced against the face of the die, the action of this stream of water being to keep cold water of nearly uniform temperature constantly against the face of the die, and incidentally to remove bubbles which may stick to the surface and thereby prevent the water from coming in contact with all parts and in that way interfering with a uniform result. Further than this, the flowing water insures extreme hardness and, therefore, a more efficient result in the finished product. Alongside of the pipe conveying water to this tank is a steam pipe which is employed to warm the water or take off the extreme chill which it might receive in extremely cold weather in winter.

The die is now as hard as it is possible for fire and water to make it, and it therefore becomes necessary to reduce this hardness or to temper it. It is carried to a muffle plate placed over a coal fire in one of the small furnaces at the end of the room, where it is subjected to a temperature of about 470 degrees for a time long enough to insure the penetration of this heat a short distance into the metal. The depth of penetration depends upon the toughness required of the die in the work it may be called upon to perform. In place of this method the die may be taken to an oil tempering furnace, which consists of a large pot heated underneath by gas flame and containing tempering oil. This oil is heated to 470 degrees, the temperature being indicated by a Zaubitz hot blast pyrometer placed on top of the furnace, as shown in Fig. 3, and which is capable of indicating up to 1200 degrees. In a certain sense we may say that these two methods are used interchangeably—that is, when the oil tempering furnaces are fully engaged the coal furnace, with its muffle plate, is brought into requisition. The final character of the metal does not vary materially whether it be hardened in one or the other.

In the tempering of small articles, such as pipe wrenches, jaws for pipe tongs and articles of similar kind, an entirely different process is followed. The articles are clasped by tongs which are so shaped as to grip one or more according to the form of the articles handled. The pieces are immersed one or more at a time in a large lead pot heated by gas, the lead in which is kept at a temperature of 1150 degrees. From this pot the articles are conveyed to a salt water tank, into which they are dropped for rapid cooling. They are now, of course, too hard and must needs be tempered. To accomplish this they are placed in wire baskets and immersed in an oil tempering pot which is heated to from 450 to 500 degrees, varying, as in the case of the dies, according to the temperature desired.

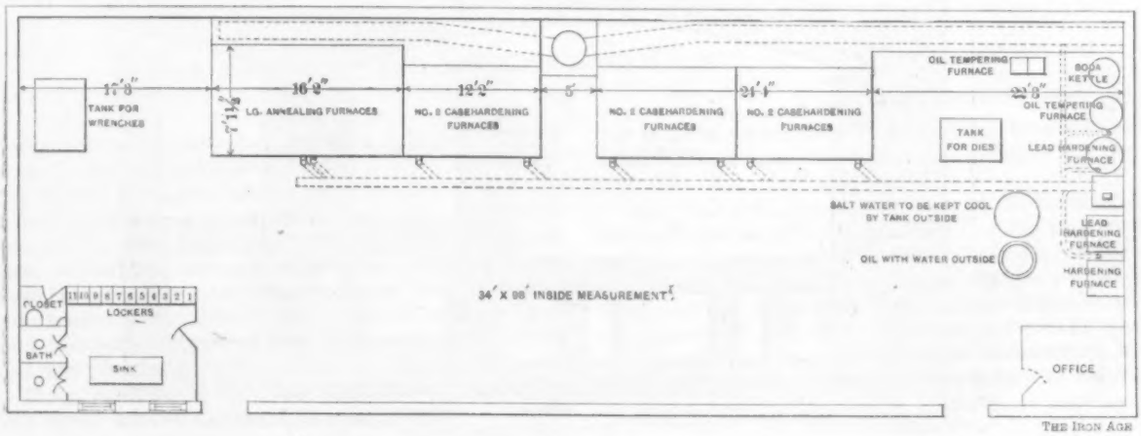


Fig. 5.—Plan.

THE HARDENING AND TEMPERING PLANT OF J. H. WILLIAMS & CO.

For case hardening the articles are packed in boxes with bone and charcoal. They are then heated to a temperature of 1200 degrees, and after a thorough baking are dumped in cold fresh water in the large tanks at one end of the building above referred to.

For annealing, the pieces are packed in boxes with charcoal dust, heated to 1150 degrees, and then allowed to become perfectly cool before being removed.

The cast iron boxes employed range from 4 to 450 pounds in weight, from 4 inches to 4 feet in length, and of varying widths and hights. Several are shown in the engraving Fig. 1, which also shows some of the trucks employed in the work, and all of which are ex-

actly the same hight as the floor of the ovens of the different furnaces.

A truck having been loaded with small boxes, such as those shown, is wheeled directly in front of the furnace door, when the space between the platform of the truck and the floor of the oven is bridged by an iron plate. Each box is then grasped by the projecting arms of a small two-wheeled truck, wheeled into the furnace, deposited in its proper position, and the truck without-truck is then grasped by the trolley which traverses the entire length of the building just in front of the furnaces and by it is conveyed to its destination.

With these appliances the men are not called upon to lift any dead load at all, and the work is therefore greatly expedited.

Results.

From the foregoing it will be seen that this method does away entirely with all guesswork, and that there

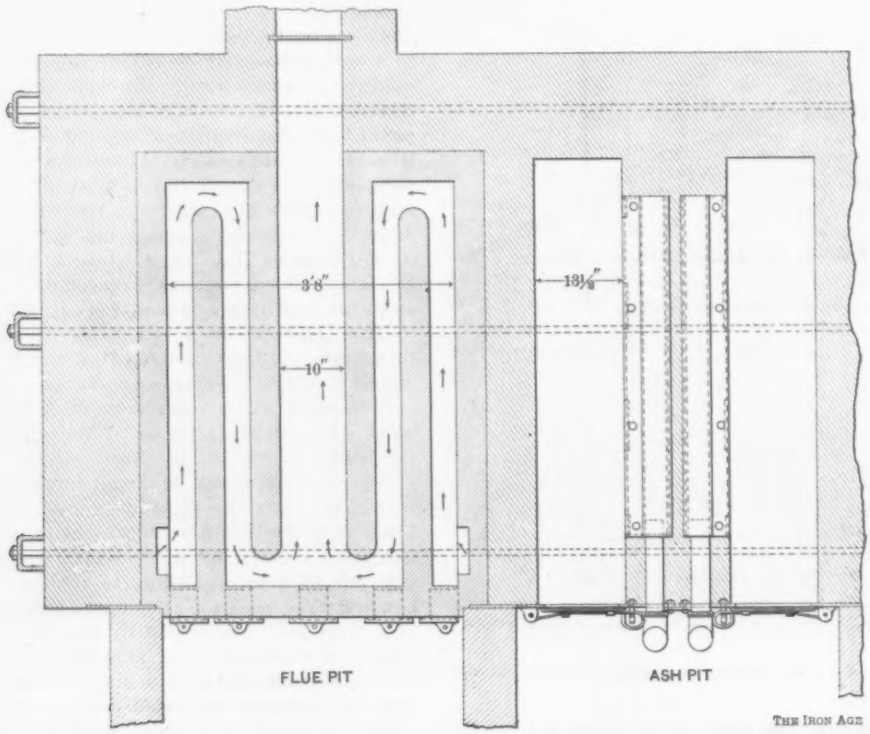


Fig. 6.—Sectional Plan Large Annealing Furnace.

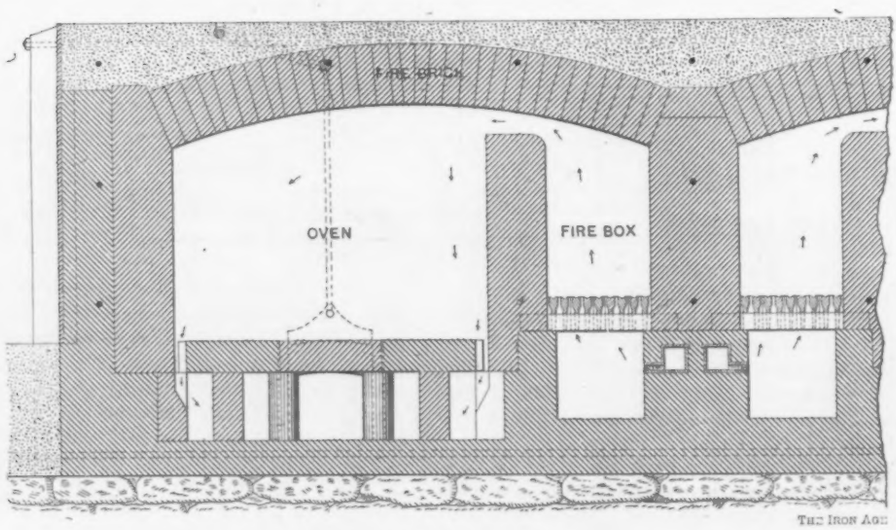


Fig. 7.—Cross Section Fig. 6.

THE HARDENING AND TEMPERING PLANT OF J. H. WILLIAMS & CO.

drawn. In the case of small boxes this truck merely consists of two small wheels mounted upon the same axle, and projecting from the front of which and forming part of the long handle are two arms, making a fork which can be slipped readily under the box. A slight depression of the handle then raises the box, when it can be wheeled easily into the oven. The hand trucks for lifting the larger boxes will be understood from Fig. 1. In this case the wheels are larger, the handle is longer and provided with cross bar, while the forwardly projecting arms are arranged to enter between the lugs cast on each side of the box. This

is no straining of the eyes as to the probable color of the article to be hardened. The fire is so regulated as to produce a certain definitely known temperature, which is indicated by the pyrometer, and the only color scheme involved in the entire operation is the reading of the figures on this instrument.

Further, since the individual is eliminated as a factor any one person can produce a result precisely duplicating the work of any one else. Since the processes are exact and founded upon sound principles the results must be uniform and such as are required. Under the old *régime*—that is, when the above men-

tioned mysterious individual had full sway—the losses in die work would average 10 to 12 per cent. The money value of this may be measured from the statement that these dies varied in cost before reaching the blacksmith anywhere from $10 to $100 and over, and that the most difficult ones to harden were almost invariably the most expensive to produce, and had in consequence to receive the most preliminary work upon them. So far the new method has shown losses of only one-half of 1 per cent. Not only has the cost of production been by these means reduced, but the greatest satisfaction to the customer has also accrued, since his articles are given the exact degree of hardness required for his work, and this with absolute uniformity.

The Bessemer-Carnegie Road.

Plans have been made for many important improvements to the road beds of the Pittsburgh, Bessemer & Lake Erie, the Carnegie road, and the Union Railroad, also owned by the Carnegie Steel Company. It has been arranged to utilize all the space between the Monongahela River and the deep hollow above Oliver, and already more than 20 miles of additional side tracks have been built and also an extension nearly 1 mile long up the hollow south of Duquesne. The great trestle between the Port Perry bridge connecting the Oliver Works with the Union Railroad by a Y bridge is about filled up, and will be widened for two tracks. The new road graded along the hillside near Kennywood Park is to be extended on an easy grade down the river, and a steel trestle work has been built across one of the hollows. Along the river front between Port Perry and West Homestead the new extension has been completed and is now in operation. More than 20 miles of new track has been laid in less than a year and miles of new road are planned.

The absorption of the Pittsburgh, Bessemer & Lake Erie direct by the Carnegie Company makes it a part of the Union Railroad system proper. This Union Railroad is a marvel. It has a locomotive for every mile of track of the standard gauge, and the Carnegie Steel Company have as many narrow gauge engines feeding the standard gauge line. One year ago the Union Railroad had 39 miles of track and 41 locomotives, and to-day it has about 50 miles of track and probably 50 engines. The Pittsburgh, Bessemer & Lake Erie has 208 miles of track, 58 engines and about 4000 cars. This means that the great steel company practically own a railroad embracing 258 miles of track, 112 engines and 4000 cars, with over 60 miles of extensions contemplated and the rights of way secured in the richest mineral region in the world.

The amount of work they are doing between Oliver and West Homestead on both sides of the river is prodigious. They utilized hot cinder to build walls of solid artificial obsidian 4 miles in length and 24 feet high that will last until the crock of doom, and permit them to utilize every available foot of space between their domain and the Government line on the river front. This wall, now in course of construction, is attracting the attention of railroad men all over the territory, as it is practically a startling innovation in railway construction, and is built of waste materials from the furnaces. The same kind of material has been used extensively along the main line of the Pittsburgh, Bessemer & Lake Erie, and it has already demonstrated its invulnerability against the effects of alluvial erosion.

This red hot cinder has been safely utilized to fill up wooden trestles. At first they use gravel and earth until the timbers are covered and then the molten waste material is dumped over the sides and a solid endurable embankment is the result. The Carnegie Company propose to utilize their own railroad as a means of handling the waste products economically, and while disposing of such materials will be building up solid railway embankments that will last for all time.

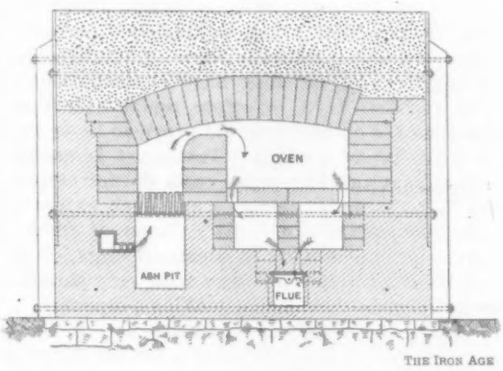


Fig. 8.

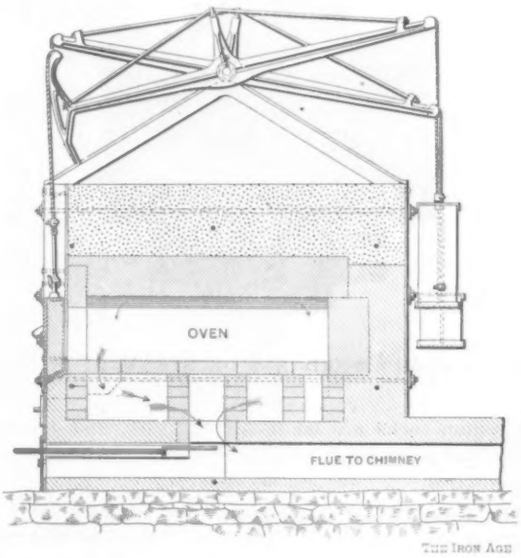


Fig. 9.

Sections of Case Hardening Furnace.

THE HARDENING AND TEMPERING PLANT OF J. H. WILLIAMS & CO.

The Amalgamated Association, at Pittsburgh, have declared the puddling departments of the Tenth street mill of the Oliver Iron & Steel Company, Pittsburgh, and of the Star Iron Works of the American Steel Hoop Company, in Allegheny, open mills. Members of the Amalgamated Association are now allowed to work in these mills and still retain their membership in the above organization. Efforts have repeatedly been made to form lodges in these mills, but without success.

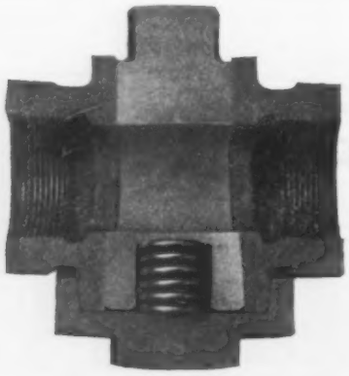
The American Bridge Company will build an office building at Butler and Fifty-first streets, Pittsbugh. The structure will be 225 feet long, 42 feet wide and three stories high. The American Bridge Company will consolidate all their offices in the Pittsburgh district in the new building.

The Clinton Land Company of Pittsburgh have bought from J. V. Thompson and others of Uniontown, Pa., 2000 acres of coal land in Redstone township, for the reported price of $700,000, and will develop the tract.

George G. Blackwell, Sons & Co., Limited, of the Albany, Liverpool, England, have issued a booklet descriptive of the refractory bricks and linings which they produce. The line covers magnesite, bauxite and chrome bricks, calcined magnesite, magnesite cement, bauxite cement and special chrome ore for furnace linings.

Special Compressed Air or Steam Stop Cock.

The American Engineering Works, 204 Dearborn street, Chicago, have brought out a special stop cock for use with compressed air or steam. In the ordinary form of stop cocks the plug is larger at the top than at the bottom, and is held in place by a nut at the bottom. Workmen will frequently loosen this nut, knock the plug up slightly in order to loosen it, to enable them to open or close the cock, and then leave it in a leaky condition. The special stop cock here shown has the plug reversed, being larger at the bottom than at the top, the plug being held tightly in place by a spring. If it does not turn easily a slight knock on top of the square head will loosen the plug and enable it to be turned readily, but it will not be left in a leaky condition, for the spring will immediately reseat the plug, making it perfectly tight.



SPECIAL COMPRESSED AIR OR STEAM STOP COCK.

These stop cocks are made for ¾, 1, 1¼ and 1½ inch pipe, either all brass or iron body with brass plug.

The Union Steel Company.—Fast progress is being made on the new plant, comprising rod, wire and wire nail mills being erected by the Union Steel Company of Pittsburgh, at Donora, on the Monongahela River. The large buildings of the plant, three in number, are practically complete. Most of the machinery has been received and is now being put in place. Only two more buildings remain to be put up, a pump house and an engine house. The large buildings are each 780 feet long. Two are 200 feet and the other 120 feet wide. The company lately drilled in a gas well near the works, and will soon drill in several more. The gas is to be used as fuel. The plant will begin operations not later than May, and perhaps in April. About 1200 men will be employed. By the time work can be started it is said the company will have spent $1,500,000 on the plant. Near the steel works an industrial town is building. Two hotels, a bank building and numerous dwelling houses are now in process of construction. In the early spring building operations are expected to become quite brisk. Among the buildings then to be put up will be a school house and a Presbyterian church. The Pittsburgh, Virginia and Charleston Railroad Company, whose road runs through the town, will erect a fine new passenger station and a large freight station.

The third steel ocean going vessel for the Northwestern Steamship Company was launched on the 2d inst. at the yards of the Chicago Shipbuilding Company. The "Northeastern" is the name of this ship, and with three sister ships it will ply between Chicago and Liverpool, carrying Western products to Europe and returning with European merchandise. The "Northeastern" has a length of 256 feet, beam 42 feet and a depth of 26½ feet. The freight capacity is 3200 tons, and it is expected the steamer will develop a speed of 15 knots. Each of the other boats is of the same size.

The Morgan Engineering Company struck a very large gas well just west of Alliance, Ohio, last week.

Minerals in the Philippines.

In a report on the mineral wealth of the Philippine Islands, the Philippine Commission say:

According to the Chief of the Mining Bureau there are now some 1200 prospectors and practical miners scattered through the different islands of the archipelago. Of these, probably 90 per cent. are Americans. They are pushing their way into the more inaccessible regions, furnishing their own protection and doing prospecting of a sort and to an extent never before paralleled in the history of the Philippine Islands. The result is that our knowledge of the mineral resources of the group is rapidly increasing. When all due allowance is made for prospectors' exaggerations it is not too much to say that the work thus far done has demonstrated the existence of many valuable mineral fields. The provinces of Benguet, Lepanto and Bontoc in particular form a district of great richness.

In the Province of Lepanto at Mancayan and Suyoc there are immense deposits of gray copper and copper sulphide, and running through this ore are veins of gold bearing quartz, which is more or less disintegrated and in places is extremely rich. This copper ore has been assayed, and the claim is made that it runs on the average 8 per cent. copper, while gold is often present in considerable quantities. The deposits are so extensive as to seem almost inexhaustible.

Lignites are known to exist in Luzon, Batan (the island, not the province), Mindoro, Masbate, Negros, Cebu, Mindanao and other islands. Some of the deposits are very extensive. As yet they have been worked at or near the surface. It is therefore remarkable that the samples thus far obtained should prove to be as good as is shown by actual analysis. Testimony is unanimous to the fact that the Philippine coals do not clinker nor do they soil the boiler tubes to any such extent as do Japanese and Australian coals. Some of them have been given practical tests in steamers engaged in the coasting trade of the archipelago with very satisfactory results as regards their steam making properties.

The extensive fields near Bulacacao, in Southern Mindoro, are within 4 to 6 miles of a harbor which gives safe anchorage throughout the year, and which has water deep enough for the large oceangoing vessels. Some of the Cebu deposits are also conveniently situated with reference to harbor facilities. It is to be confidently expected that the coals will play a very important part in the future development of the archipelago.

The outlook as to gold mines grows more favorable as the operations of prospectors are extended. Modern gold mining machinery has never been used in the Philippines. Igorroto miners in the Benguet-Lepanto-Bontoc district discard all rock in which there is not visible a considerable quantity of free gold. Prospectors in this region claim to have located very extensive deposits of low grade, free milling ore, which will yield large and certain returns as soon as concessions can be secured and machinery put in place. Unless the statements of those who have been working in this region are utterly false, it is true that very valuable deposits have been located and that extensive operations will be undertaken as soon as claims can be granted and machinery placed. At all events, it is certain that the men who have located these deposits have sufficient faith in them to camp on them and wait month after month for the time to come when they can establish their claims.

Extensive deposits of high grade iron ore are known to exist, but it would seem that their development must be preceded by the development of the coal fields.

The Valley Furnace Wage Scale.—Practically all the blast furnaces in the Mahoning and Shenango valleys have compromised with their men on the basis of wages first adopted at Struthers Furnace of the Struthers Furnace Company, at Struthers, Ohio. This is a reduction of about 5 per cent. over previous wages. The new rates are as follows: Hot blast man, $1.80 per day; keepers, $2.10 per day; cagers, $1.90; bin man, $1.65; ore men, $1.70; head top fillers, $2.05; top fillers, $2.00; fillers, $1.80; helpers, $1.80; cinder men, $1.80.

A WORKINGMAN'S COLLEGE.

The Educational Work of the Cooper Union of New York.

In no period of the world's history and in no country on its surface has the "true gospel of wealth"—to borrow a phrase of Andrew Carnegie—secured such wide and practical recognition as in the United States during the latter half of the century just closed. The history of the time embraces an unparalleled record of wise and generous benefactions for the advancement of education and morals, the relief of suffering, the amelioration of living conditions and all that makes for the welfare, betterment and happiness of the race. A long list of universities and colleges, training schools, charitable institutions, libraries, hospitals and asylums, model dwellings, &c., in all parts of the land, founded and endowed by enlightened private munificence, bears testimony to the new spirit of altruism which has accompanied the marvelous material progress of modern America. That the doctrine of the stewardship of riches is spreading in this country and becoming an impulsive force is one of the most hopeful signs of the times. Nothing is better calculated to promote the well being of the community at large and provide an effective compensation for the inequalities of life.

Among the beneficent American institutions which stand out as monuments to the wisdom and generosity of private individuals none is more widely known or held in more high regard than the Cooper Union for the Advancement of Science and Art. Founded 42 years ago by Peter Cooper, one of the most prominent New York merchants and manufacturers of his day, it has fully justified, in its subsequent career of successful effort, the foresight and munificence of its creator. The story of the origin and development of the Cooper Union is a part of the educational and industrial history of the country, and is too well known to require recapitulation in these columns. But a brief sketch of the aims of the founder will be of interest, as indicating the broad lines upon which the institution is conducted.

Fig. 1.—View of South Side of the Cooper Union Building.

A WORKINGMAN'S COLLEGE.

Objects of the Cooper Union.

By the terms of Mr. Cooper's trust deed, the following objects were specified to be established in the order of enumeration:

1. To provide courses of instruction at night, free to all who should attend the same, in such branches of knowledge as in the opinion of the Board of Trustees would tend to improve and elevate the working classes of the city of New York. This provision has been carried into effect by the night classes for working men and women, which during the last 42 years have been attended by more than 100,000 different persons.

2. To the support and maintenance of a free reading room, galleries of art and scientific collections, designed to improve and instruct those whose occupations are, in the opinion of the Board of Trustees, such as to deprive

them of proper recreation and instruction. Under this provision a free reading room and library, containing some 30,000 volumes and resorted to by about 3000 visitors daily, has been established and maintained, and within the last six years a museum of decorative art has also been open to the public, and is now in practical use by many artisans and others who are employed in artistic occupations.

3. To provide and maintain a school for the instruction of women in the arts of design. Under this provision a women's art school has been established and now affords instruction to about 250 young women, as a preparation for employment and in work requiring a knowledge of drawing and colors. A school in telegraphy and in stenography and typewriting for women is aso maintained and affords instruction to about 100 graduates annually.

The fourth provision looked to the establishment and

Fig. 2.—Monument of Peter Cooper.

A WORKINGMAN'S COLLEGE.

maintenance of a polytechnic school by day, so that the space used at night time might also be employed in the day time for the purpose of technological education. It was distinctly stipulated, however, that this portion of the work was not to be undertaken until the income of the institution should warrant the expense without curtailing the operations of the three departments above enumerated.

Andrew Carnegie's Gift.

Until about a year ago the trustees of Cooper Union were unable to see their way to the completion of the scheme of instruction for the working classes confided to them for execution. All the financial resources at their disposal were needed for the maintenance and extension of the work already in hand, and the prospect of establishing a new and independent department of technical instruction by day appeared to be remote. At the close of the year 1899, however, the way was cleared in a manner as welcome as it was unexpected. Andrew Carnegie, whose leadership in the iron and steel business is only equaled by his munificent gifts in aid of public libraries and institutions for the diffusion of practical knowledge, came forward with an offer to supply the sum needed for the purpose of establishing the day school for mechanics. In a graceful letter to Abram S. Hewitt Mr. Carnegie expressed the desire to furnish a sum of $300,000, adding that "it would be a rare satisfaction to me, as a humble follower of Peter Cooper, to be allowed to feel that I had contributed the last stone, as it were, to the cairn of his great benefactions."

Mr. Carnegie's munificent offer was gratefully accepted by the trustees of Cooper Union, two of whom, Edward Cooper and Abram S. Hewitt, the son and son-in-law of Peter Cooper, subsequently supplemented Mr. Carnegie's gift by generous donations of $100,000 each, bringing the addition to the endowment of the Cooper Union up to $500,000. Thus the institution came into possession of an increased income of about $25,000 per annum, which was intended by all parties concerned to be devoted to the projection of the work of instruction carried on at night into the day, so that the unoccupied space might be devoted, day and night alike, to the practical education contemplated by the scheme of the Cooper Union.

Free Day School Established.

The first idea of the trustees was that a mechanic arts high school should be established on the general lines which had been projected by the Board of Education of the city of New York for the boys who had completed their course in the public schools. After careful consideration, however, it became apparent that it would not be possible, with the means at their command, to establish such a school, the actual expense of which was estimated to be not less than $60,000 per annum, a sum equal to all the expenditures of the Cooper Union for all the work theretofore carried on within its walls. Moreover, it was apparent that such a school, to be of any value, would necessarily involve mechanical shops filled with tools for the use of the students. On examination it was found that there was not sufficient room in the Cooper Union Building for the accommodation of such shops, and, even if the space existed, it was seen to be impossible to run such shops to any advantage, except upon commercial lines, which would include the building of tools for the market. Furthermore, a fact that weighed with the trustees was that the design of the founder of Cooper Union was not to teach trades, but to give instruction to those already engaged in trades in such departments of knowledge as might fit them to become foremen, employers, &c.

Large Extensions of Facilities.

The idea of establishing a mechanic arts high school on the lines originally contemplated was therefore abandoned, but the proper solution of the problem was readily found. The number of applicants for admission to the night classes had always exhausted the existing but not the possible capacity of the institution. The curriculum of study, although very satisfactory, had not been quite as extensive as it might be to meet the demands of students of more than ordinary ability. The school term had been practically limited to six months of study, whereas eight months could be profitably covered by class work. In view of these facts it was decided to extend the duration of the classes from six to eight months, by which the existing work could be accomplished in four instead of five years. The fifth year could thus be devoted to the practical applications of the scientific knowledge acquired in the classes. The term of study being thus extended, larger provision was indispensable for the admission of a greater number of pupils. To accomplish this purpose very large extensions were made in the chemical and physical laboratories, nearly trebling their capacity, and thoroughly equipped electrical and thermo-dynamic laboratories were added, all to be available for use both night and day.

By these arrangements the advantages offered in the night classes were practically extended into the day time, all the facilities for instruction being made available for another set of students who might require instruction either in the chemical, physical or electrical

laboratories, and who were able to give the time necessary for such work during the day.

Day Students.

Naturally these day students would be drawn from a different class from those who are engaged in earning their living by day. It was the opinion of the trustees that there were many persons in and near New York City who could so arrange their occupations, or who have sufficient means saved out of their earnings, as to permit them to perfect themselves in some of the branches which are taught under extremely favorable circumstances, the instruction in the day classes (as in all others at the Cooper Union) being absolutely free of all charge. Hence the new day schools offer valuable opportunities to many persons who may be able to provide themselves with food and clothing, but who cannot afford to pay for instruction.

Free Instruction.

The day classes, which have now been in operation for several weeks, have not, however, attracted the number of men that it was confidently expected would eagerly avail themselves of the remarkable advantages offered. Whereas there is accommodation in the classes for 200 or more students, only about 25 or 30 have enrolled themselves so far. The trustees are, naturally, desirous of securing more encouraging results from the large outlay that has been made in establishing the new department. While the night classes are all full to overflowing, and more applicants are, perforce, turned away than can be admitted, the free day schools, with exactly similar facilities to offer, are comparatively neglected. Possibly the reason for this state of affairs is that their existence is but little known as yet to the general public. When the fame of the schools has spread more generally and the unexampled advantages they offer are more widely recognized, there is but little doubt that many workmen, both in and out of New York—for residence in New York is not a necessary condition of admission to the day or night schools of the Cooper Union—will take advantage of the opportunity thus offered to perfect themselves in the occupations in which they are engaged.

Short Time Students.

While regular courses of study, covering three years, are arranged for students in the free day schools, instruction is also offered to mechanics or others who may desire special information. It is probable that many workmen who have encountered difficulties too great for removal at home will come to New York for brief periods of instruction, and arrangements will be made by which such pupils may gratify their wish, even though the attendance may be limited to a single week or month in the year. Thus the laboratories are open to engineers, mechanics, chemists, &c., for the purpose of solving practical problems arising in their actual experience. In other words, the object of the trustees is to provide every possible facility by which workmen or those engaged in mechanical or scientific trades or professions may perfect themselves in special branches of knowledge. It will thus be seen that advantages of a unique and wholly unusual nature are now offered in the Cooper Union free day schools.

Fig. 3.—View in Chemical Laboratory for Qualitative Analysis

A WORKINGMAN'S COLLEGE.

Instruction Practical.

The instruction in the chemical, electrical and physical laboratories by day is, however, primarily designed for the benefit of the graduates of the high schools of the city, who will be fully qualified to receive the practical education for which foundation has been laid in the high schools. Graduation from these schools entitles the student to admission to the free laboratories in the Cooper Union. Bringing with them a sufficient knowledge of mathematics, these students can enter directly into the laboratories and receive a practical training in industrial chemistry and the mechanical applications of force, heat and electricity, the schools being designed to supplement the courses of instruction furnished in the high schools, and thus prepare the pupils for admission to the higher courses of instruction offered by the scientific and engineering departments of Columbia University and other similar institutions.

Qualification of Students.

The work is entirely of a practical nature, conducted in the laboratories and engine room. It is required of

the students on entering that they possess a sufficient knowledge of mathematics to enable them to pursue profitably the experimental work. This implies a knowledge of algebra, plain and solid geometry and trigonometry. Instruction in mathematics is provided only in the night school.

The equipment of the laboratories is sufficient to provide for practical instruction for a three years' course of study, and enables the student to make his choice of the line of work he intends to follow, whether it be civil, mechanical or electrical engineering. The laboratory work for the first two years is the same for each of these courses. During the third year the mechanical engineers devote a larger portion of their time to heat motors of various kinds, the electrical engineers are chiefly engaged with dynamos and their appurtenances, while the civil engineers devote much time to field work.

The Faculty.

The schools of the Cooper Union are under the direction of Prof. George W. Plympton, who is also instructor in civil engineering. Professor Plympton has been for 32 years a member of the faculty of the institution. For ten years he acted as lecturer on physics and the higher mathematics. Since 1879 he has been the director of the educational department of the institution, having the general management of the classes and the appointment of the teachers, as well as instructing the higher classes in applied mechanics. Professor Plympton, who is a civil engineer by profession, is a graduate of the Troy Polytechnic, and for the past 38 years has filled the chair of civil engineering in the Brooklyn Polytechnic.

Prof. William A. Anthony, formerly professor of electrical engineering at Cornell University and a recognized authority in the electrical field, has the direction of the physical and electrical laboratories and of the instruction in those departments.

Prof. Robert Spice is the head of the chemistry department and has the direction of the chemical laboratory and of all the work in that line. Mr. Spice has filled the chair of chemistry at Cooper Union for 12 years and for six years was professor of chemistry in the Brooklyn Polytechnic Institute. He was graduated from King's College, London, where he studied under Professors Miller, Landon, Bloxam and Hoffman. He was also a pupil of Bunsen at Heidelberg University.

The instructors in the scientific department are: Waller Holliday, differential and integral calculus and analytical geometry; Rufus Sheldon, analytical and descriptive geometry; J. L. Tupper, trigonometry, geometry and mechanics; C. L. Tyner, mechanics and geometry; Edwin R. Storm, W. P. Hennessy, J. Stuart Wilson, John D. Griffiths, Henry R. Codwise, Patrick Quilty, E. M. Van Norden and J. W. Langguth, algebra and geometry; Celestino Garcia, mechanical drawing and machine designing; Alfred Spice, R. J. Colony, G. M. S. Neustadt and C. E. Thies, chemical analysis; John J. Breslawsky, F. M. Hartmann and Louis A. Martin, assistants in physical laboratory, and J. Charles Riedel, elementary physics.

Night Schools.

The night schools of the Cooper Union are divided into two sections, the scientific and the art departments. The term commences on October 1 and ends about May 15. The minimum age of entry to the classes is 15 years. The regular course of study in this department extends through five terms, embracing the following subjects:

Fig. 4.—Chemical Laboratory No. 1 for Quantitative Analysis.

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Class E, first year: Algebra, geometry, elementary chemistry, civics.

Class D, second year: Algebra, geometry, elementary chemistry, physics, civics.

Class C, third year: Trigonometry, descriptive geometry, analytical geometry, elementary statics and dynamics, electrical measurements, civics.

Class B, fourth year: Analytical geometry, differential and integral calculus, mechanical drawing, machine designing.

Class A, fifth year: Applied mechanics, higher physics, chemical analysis, machine designing.

Students who complete the course receive the Cooper medal and diploma and the degree of Bachelor of Science. The degree of Civil Engineer or Mechanical Engineer or of Electrical Engineer is conferred by the Board of Trustees upon graduates of the Cooper Union after a suitable period (from three to five years) of engineering practice, which has included the designing and responsible charge of some engineering work. Pupils who have not pursued the regular course, but have successfully completed a single study, receive a certificate for the same. Lectures on elementary chemistry, physics and electrical measurements are given on Monday, Tuesday, Wednesday and Thursday evenings.

In the art department classes are held in rudimental

drawing, form drawing, cast drawing, decorative designing, ornamental drawing, modeling in clay, linear perspective drawing, architectural drawing and mechanical drawing. The last named class is especially designed to benefit artisans of all kinds. A complete course of three seasons is provided for, beginning with geometrical problems and ending with finished shaded drawing of mechanical construction.

Day Classes.

The sessions of the day school are held between 10 a.m. and 3 p.m. on five days of the week, from Monday to Friday. The entire course covers three years and is laid out as follows:

FIRST YEAR—FIRST HALF.

Physics.—Laws of motion, force work and energy. Law of fluid pressure, buoyancy, specific gravity. Measurement of temperature and quantity of heat, expansion, liquefaction and vaporization, operation of heat engine.

In Chemical Laboratory.—Preparation and properties of gases. Law of combination by weight and by volume.

SECOND HALF YEAR, BEGINNING FEBRUARY 1.

In Physical Laboratories.—General principles of sound, light and electricity.

In Chemical Laboratory.—Work involving chemical calculations, experiments on the properties of metallic compounds.

SECOND YEAR.

In Physical Laboratory.—Two sessions a week of three hours each throughout the year.

In Chemical Laboratory.—General analysis (qualitative), with adequate practice in examination of unknown substances.

THIRD YEAR.

In Physical Laboratory.—Principles and theory of electrical measurements, theory and construction of dynamo electric machinery; principles of dynamo designing, winding of armatures and fields; electrical transmission of energy; proportioning of transmitting lines; wiring of buildings; measurements of force, power and energy; composition and resolution of forces, with special reference to stresses in framed structures; strength of materials; experimental study of steam, hot air and internal combustion engines, and refrigerating machinery.

In Chemical Laboratory.—Quantitative analysis by weight and by volume; electrolytic work; advanced work in technical analysis.

Work for the Civil Engineering Section mostly during third year, and in place of the more advanced work in the physical laboratory; determination of areas and location of curves by chain or tape only; adjustment and use of the level; section and cross section work and the measurement of excavation and embankments; adjustment and use of the engineer's transit; the measurement of extended areas; the location of railway curves and use in general triangulation work; study of masonry and framed structures.

The Chemical Laboratory.

The chemical laboratory, located on the fifth floor of the Cooper Union and claimed to be the finest and best equipped laboratory of its kind in the country, is under the charge of Professor Spice, occupies the entire north front of the building and is divided into two parts. The qualitative analysis section, a room 85 x 55 feet in area, shown in Fig. 3, accommodates 88 students at three double rows of desks, each student having an unusually liberal proportion of space. Every student is provided with a full set of bottles, tubes and necessary paraphernalia, and has the use of half a sink. By an ingenious original arrangement, the lockers below the desks are made to do double duty for the day and night pupils without the apparatus of the one being disturbed by the other. The lighting arrangements are excellent. Gas is used with Welsbach burners, the jets being placed above the student's head, one on either side, so that no shadow is thrown on his work. The gas and water pipes are all above the desks, only the drain pipes being underneath, and a clear space exists below the desks and the floor, providing for the free circulation of air. Six hoods inclosed within glass doors are placed in the center of the room, and all fumes are quickly exhausted by a 7-foot fan driven by a 5 horse-power motor. The exhaust capacity is 12,000 cubic feet a minute, therefore the air of the room is changed about twice a minute, leaving the atmosphere perfectly clear at all times. Two machines of novel construction for the manufacture of sulphureted hydrogen are placed at one end of the room, with storage tanks of 25-gallon capacity. The gas is made and distributed through pipes in the laboratory without involving the slightest disagreeable odor. A large balance room 40 feet in length, containing 25 balances, shut off from the laboratory by glass partitions and maintained at an even temperature, adjoins the laboratory on the north side. A feature of the laboratory is a reference library containing all the standard works on chemistry, which is available for the use of the students at all times. Considerable unoccupied space is left in the room for special work. This laboratory is one of the

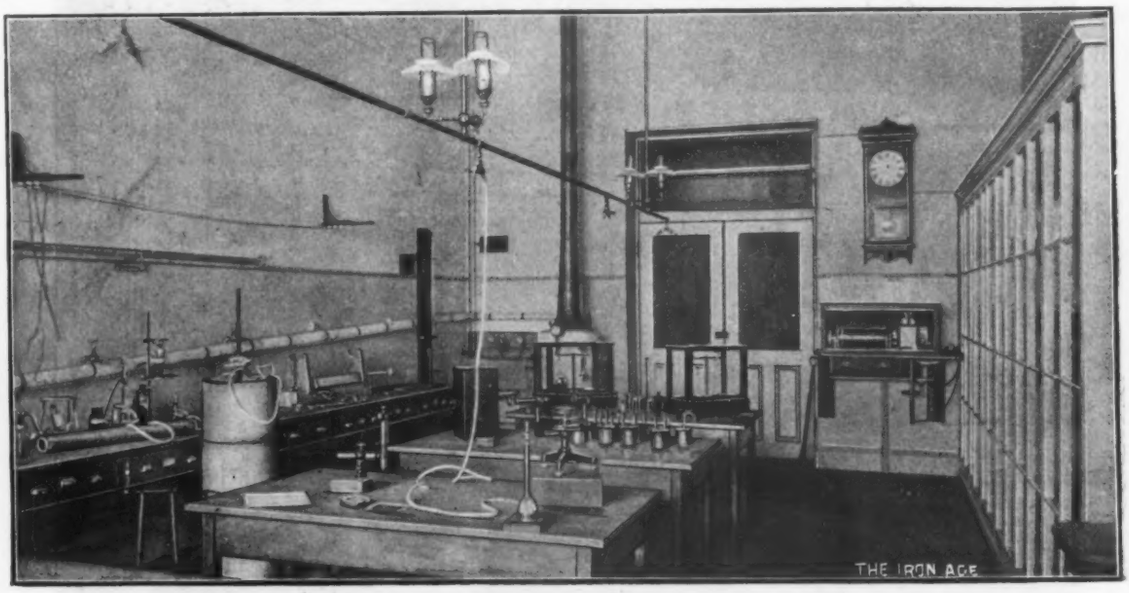


Fig. 5.—Physical Laboratory No. 1.

A WORKINGMAN'S COLLEGE.

latest and most important extensions made in the Cooper Union. It occupies the space formerly devoted to a chemical lecture room. The latter has been moved down to the second floor of the building and occupies a room formerly rented. The capacity of the chemical laboratory has been tripled the past year.

The two smaller adjoining rooms on the east side of the building, which were formerly used, one for qualitative and one for quantitative analysis, are now both used for quantitative work, accommodating 40 men. A view of one of these rooms is given in Fig. 4. Included in the equipment of the quantitative laboratory are a number of drying ovens, gas furnace for assay work driven by a small electrical motor, and an automatic blast, also driven by a small independent motor, which is used at the same time as an exhaust for filter purposes. The chemical laboratory is completely equipped with the most modern apparatus for instruction in a complete course in qualitative and quantitative chemical analysis, beginning with the preparation of the elementary gases and tests of their properties, and continuing through to the delicate determinations of quantitative analysis.

The Physical Laboratories.

The physical laboratories, in charge of Professor Anthony, occupy three rooms on the east side of the same floor. No. 3 is devoted to wave motion and the properties of materials and is furnished with a machine for testing the strength of materials up to 15,000 pounds, apparatus for testing the torsion of wires, vibrations, &c. Room No. 2 contains apparatus for determining specific heats, pressure in steam boilers, expansion of metals and gases, &c.; and room No. 1, shown in Fig. 5, is devoted largely to apparatus for observations in optics, wave lengths of light, foci of lenses, refraction of light and kindred studies. The equipment of the physical laboratories is very complete in instruments of the most modern type for measurement and experimentation in mechanics, heat, sound and light, including balances, thermometers, a chronograph for the accurate measurement of time, dividing engine, &c. Near by the physical laboratories is the physical lecture room, a fine auditorium, capable of accommodating 450 students, a view of which is given in Fig. 6.

Electrical Laboratory.

The electrical laboratory, Fig. 7, also under the direction of Professor Anthony, is one of the latest additions to the equipment of the Cooper Union. It is located on the street level at the south side of the building, and is provided with several resistance sets, a subdivided megohm, a number of ammeters and voltmeters for direct and alternating currents, several small dynamos and motors, a very complete switch board serving to connect the dynamos in parallel or series or operate them as motors, static and rotary transformers, and all electrical apparatus necessary for the measurement of the performance and efficiency of motors and dynamo machines. A completely furnished photometer room for the measurement of electric lights is an important part of the equipment in this department.

Another notable feature of the electrical laboratory is a De la Vergne refrigerating machine on the ammonia system, having a capacity of 1 ton of refrigeration. The machine is fitted with every device for the measurement of the amount of heat transformed and for taking the temperature at every stage of the ice making process. A small motor is used to run the machine and is equipped with facilities for determining accurately the amount of electrical energy employed in the work of refrigerating.

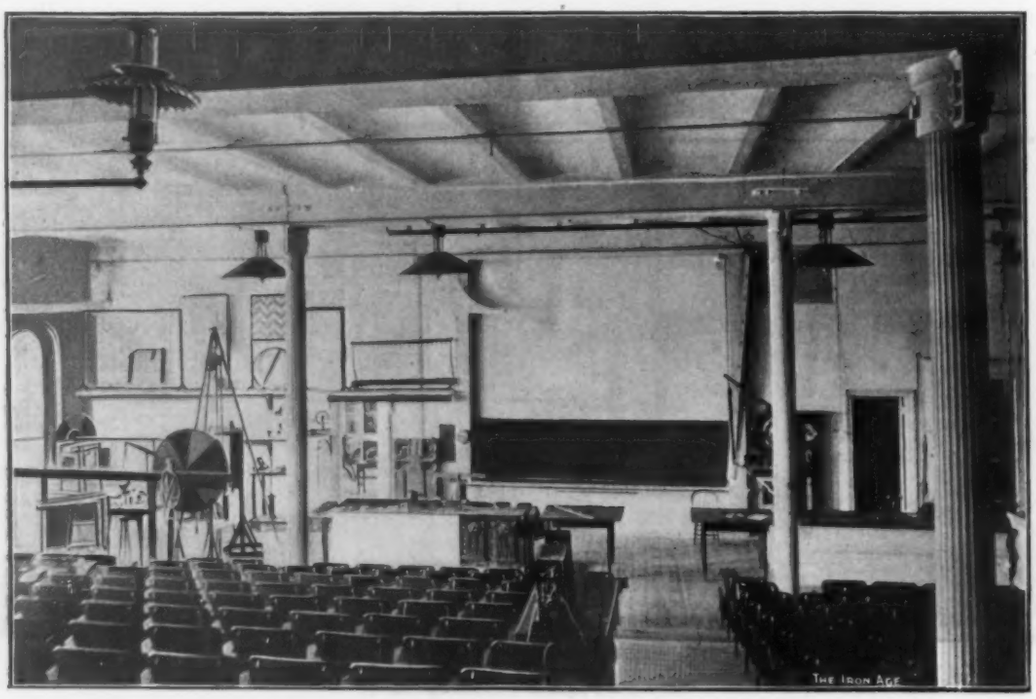


Fig. 6.—Physical Lecture Room.

A WORKINGMAN'S COLLEGE.

Engine Room.

Adjoining the electrical laboratory is the new engine room, Fig. 8, furnished with a 40 horse-power high speed engine made by the Ames Iron Works of Oswego, N. Y., and fitted with indicators, friction brake, air pump and all the appliances for measuring the power furnished by it and the weight of the steam condensed. A Wheeler surface condenser is in use with the engine. Two 10 horse-power dynamos, each giving direct and alternating currents respectively, are also located in this room. When not in use for experimental purposes these dynamos serve to furnish light for the building. Another machine is a kerosene oil motor, which governs automatically, giving a uniform speed at all loads. These machines are all arranged with reference to affording a thorough study of their operation.

A Wide Scope of Work.

Exigencies of space forbid reference to the other lines of work carried on at the Cooper Union, including the

free library and reading room, with some 30,000 volumes, which is visited by about 60,000 persons a month; popular lectures on social, political and scientific subjects; the museum and art gallery, shown in Fig. 9; the woman's free art school; free classes for women in stenography and typewriting and in telegraphy and numerous other features, which go to make up the work of this truly beneficent institution seated in the heart of one of the most populous quarters of the metropolis of the country. That its advantages are fully appreciated by the class of persons for whose benefit it was founded is amply proved by the fact, already mentioned, that its evening classes are crowded to their fullest capacity night after night, and that each class has a long waiting list of applicants. Nearly 2000 pupils are enrolled in the various night classes, two-thirds in the art division and one-third in the scientific division. Some of these come from as far as 18 miles distance.

Occupations of Students.

The occupations of the students are remarkably varied. In a list of the first 1000 applicants for admission to the scientific department last year were clerks, mechanics, office boys, electricians, draftsmen, salesmen, stenographers, students, surveyors, laborers, telegraphers, traders, chemists, engineers, collectors, postmen, custodians, drivers, motormen, firemen, printers, photographers, conductors, insurance agents, bartenders, waiters, elevator boys and farmers. At the present time, in spite of the fact that the facilities of the institution were enlarged materially last year, there are more applicants outside than students inside.

A remarkable fact in connection with the Cooper Union is that the trustees have never been called upon to expel a pupil. The director, Professor Plympton, has not once in 22 years had occasion to report a case for discipline to the governing board.

Needs of the Cooper Union.

A popular impression is abroad that the Cooper Union is amply provided with funds. We are assured that nothing could be further from the actual facts. The additional income of $25,000, provided last year by the gifts of Messrs. Carnegie, Hewitt and Cooper, has been entirely absorbed by the extension of the work and the improvements recently made in connection with the day and night classes. Already the necessity is in sight for the securing of further accommodations by the displacement of some of the tenants who still occupy portions of the building and whose rentals provide a considerable part of the income of the institution. Thus, while it will no longer be necessary to make appeals for opening new departments of the institution, the resources of the Cooper Union will very soon be insufficient for the larger number of pupils for whom provision must be made. It is thought likely that an additional income of $25,000 will before long be required. Liberal donors, therefore, who may be disposed to aid in the effort to establish a distinctly workingman's college, will find abundant opportunity for their beneficence in adding to the current income of this admirable institution. The hope and desire of the trustees is to be able to appropriate the entire building to free instruction for the working classes by occupying the portion at present rented out. The displacement of tenants is gradually going on, but the complete consummation of the purposes of the founder and of the trustees in whom he vested the care of the Cooper Union will not be reached until they are placed in possession of the means necessary to enable them to dispense with the income from rents.

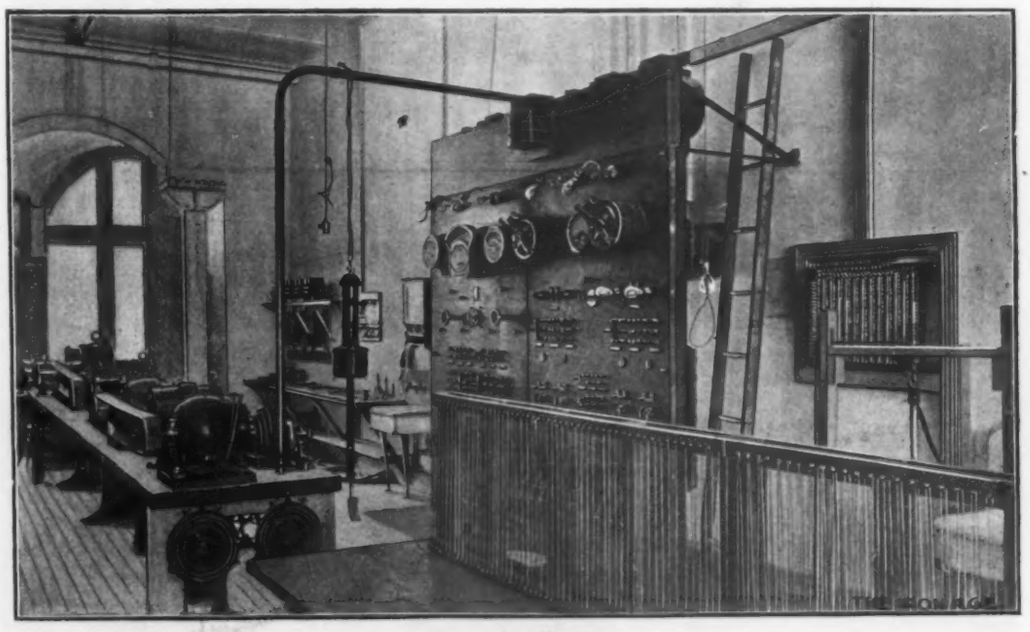


Fig. 7.—Electrical Laboratory.

A WORKINGMAN'S COLLEGE.

The trustees of the Cooper Union, to whose unwearied and self sacrificing effort is due its great measure of success, are Edward Cooper, Abram S. Hewitt, John E. Parsons and R. Fulton Cutting, the first named three being of the five original trustees appointed by Peter Cooper. Mr. Hewitt has been the active secretary of the institution for over 40 years. During the greater part of a long and busy life he has devoted to its interests a large share of his time and energies, and to him has fallen the onerous task of organizing and developing its work. Mr. Cooper has acted as president of the Cooper Union since the death of his father in 1883. Both these gentlemen are nearing 80 years of age, and their great desire, naturally, is to see the institution in which their interests and affections are so closely bound up placed in a position to accomplish its full possibilities of usefulness.

Official returns of the German foreign trade for 1900 show the imports to be 5,833,312,000 marks, an increase over 1899 of 50,084,000 marks, and the exports 4,555,291,000 marks, an increase of 186,882,000 marks over the previous year.

Canadian News.

Sault Ste. Marie Developments.

TORONTO, February 2, 1901.—F. H. Clergue returned from Europe a few days ago and spent some time doing business in Toronto. He had a long interview with several members of the Ontario Cabinet, the questions discussed relating presumably to the carrying out of the conditions under which he holds the great territorial, mineral and timber concessions made to him at the last session of the Legislature. These concessions consist of two parts—one made to the Algoma Central Railway Company, the other to the Ontario, Hudson's Bay & Western Railway Company. These two roads when completed will give a continuous line from Sault Ste. Marie to James Bay. The grant to the Algoma Central Railway Company consists of 7400 acres a mile throughout its 150 miles of main line, that to the Ontario, Hudson's Bay & Western Railway Company consists, first, of a cash subsidy of $2000 per mile throughout its 240 miles and a land grant of 5000 acres per mile. To earn these grants the roads must be built, and several other conditions must be fulfilled to secure the Algoma Central subsidies. These conditions are specified in an act passed last session. 1, 225 miles of line must be built before May 1, 1903; 2, there must be an additional water power development at Sault Ste. Marie of 40,000 horse-power; this to be done in three years; 3, smelting and reduction works are to be built there, having a capacity of 300 tons of ore per day; they must be completed in two years; 4, chemical works, requiring 5000 horse-power for their operation are to be completed in the same time; 5, a new pulp mill of 50 tons daily capacity to be erected at the Sault, to be finished within a year; 6, every year for ten years 1000 male settlers of the age of 16 years or over must be placed on the lands traversed by the Algoma Central Railway; 7, for this purpose immigration offices are to be established by the Algoma Central Company in Toronto and somewhere in the United Kingdom; 8, a line of steel steamships of not less than 2000 tons each must be maintained between Michipicoton and Sault Ste. Marie.

Several of these conditions are in an advanced stage of performance. Upward of 40 miles of the Algoma Central Railway are built, and further construction is being pushed. Four steamers were placed on the lakes last season by the company. The pulp mill is completed. As for the state of progress in other respects some idea is furnished by the following synopsis of an interview given by Mr. Clergue while in Toronto:

While in Europe he arranged for the addition of four large steamers to his freight fleet, which will raise the number to eight. The new boats are to be of the same class as the first four, being of the same capacity, 2500 tons each. The entire fleet will be employed in carrying ore from Michipicoton to the Midland and other Canadian furnaces. His Bessemer steel plant at Sault Ste. Marie will, he says, be turning out 600 tons of steel rails per day by next July. For the first season the pig iron will be drawn from the Midland Furnace, but by next December there will be two 300-ton blast furnaces at Sault Ste. Marie itself, Mr. Clergue says. As for bringing in the quota of immigrants called for by his contract, he says he opened immigration bureaus at London and Liverpool, and made arrangements for bringing over large numbers of miners, artisans and laborers from Norway and Sweden. When navigation opens in the spring these will begin to arrive. By July Mr. Clergue expects 2000, and by the end of the present year between 3000 and 4000. A large number of the men secured are, he says, skilled workers in iron and steel and are to be employed in the Sault Ste.Marie steel plant and rail mill. Coming from Norway and Sweden, as many of the immigrants are, they will find themselves at home in the Algoma climate and in the work of mining and timber cutting.

Mr. Clergue denied emphatically the story cabled about a fortnight ago from London to the effect that he was to join a federation of the steel industries of the great lakes. He expresses great confidence in the future of the Canadian steel industry, and predicts that

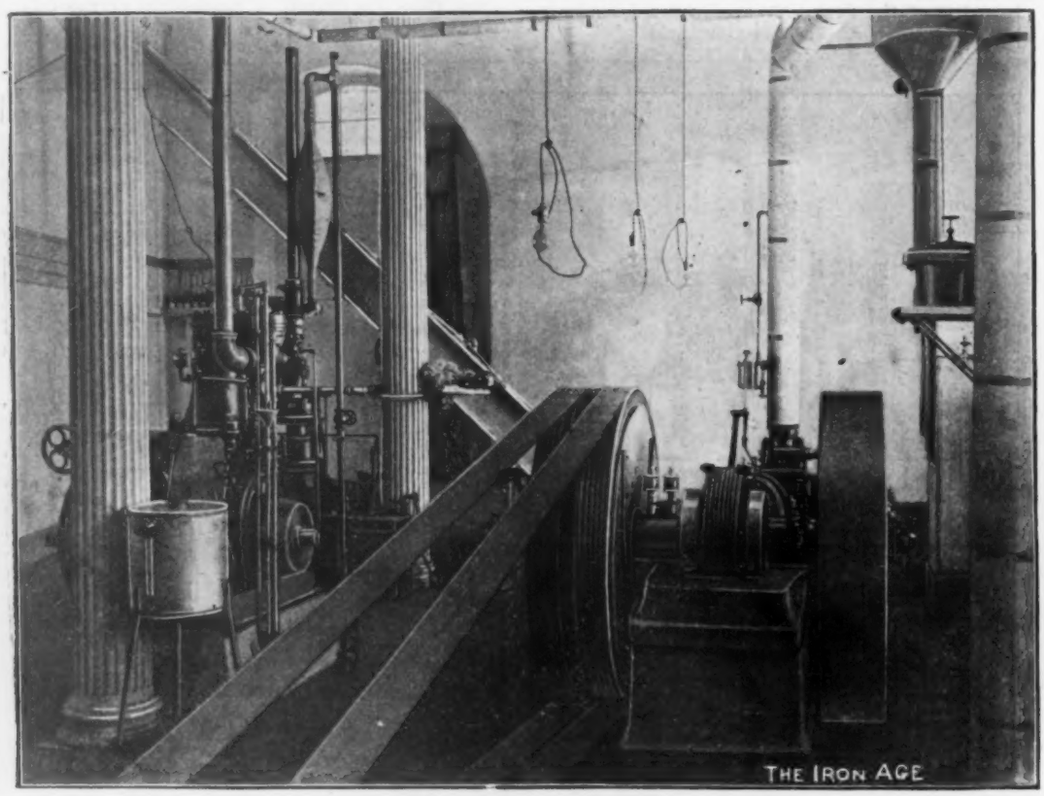


Fig. 8.—Engine Room.

A WORKINGMAN'S COLLEGE.

a great part of it will gather round Georgian Bay, at points like Midland and Collingwood. Referring to the foreign market for the Canadian product, he said that the Sydney (C. B.) people were now selling pig iron in Glasgow.

From Toronto Mr. Clergue went to Montreal, and from there to Halifax. He was interviewed in the last named city as to his opinion of it as a steel shipbuilding center and expressed himself as very sure of its success.

Halifax and Shipbuilding.

At the annual meeting of the Halifax Board of Trade the shipbuilding project was discussed. The president outlined the view arrived at by the board's committee that was appointed to confer with a committee of the City Council on the subject. Aid according to results, he said, was the idea of the board, and the one its committee would favor. As a matter of fact this was the stand taken by the board's committee at the conference with the City Council's committee. The spokesman of that committee had said at the conference that the Board of Trade members had had a talk on the matter and were practically agreed that the city must receive a return from any assistance rendered the projected shipyards and that private enterprise should not be interfered with. They thought the best form of assistance a subsidy per ton for completed shipping ready for sea for a specified number of years. It would not be advisable for the undertaking to be absolutely free of taxation. Under existing legislation the new industry could be relieved of assessment on personal property and pay 1 per cent. on real estate instead. There were objections to offering a free site that the city did not know what sort of a site was required and the company might select a very costly site. His *confrères* did not think the city should mix up in a private enterprise by taking stock. If this was done the time might come when it would be regretted.

This principle received a good deal of support, but mainly from the Board of Trade conferees, the Council's conferees inclining to the idea that an annual bonus should be paid irrespective of the output of the works. Thus Alderman Musgrave would have the city pay $10,000 a year for 20 years. One member of the Board of Trade committee proposed $2 a ton on completed ships for five years, and $1 per ton for a further period of five years, the total subsidy in any one year not to exceed $20,000. In support of this liberal proposition it was pointed out that St. John is working energetically to get the yards. Senator Power said that Halifax should not lose its head. It would be two years before a plate could be produced at Sydney, and the shipyard could hardly commence work before. He was up to the tricks of the trade also, he declared, in the pitting of St. John against Halifax. Nothing was decided. Two days later the following resolution was passed by the Halifax Board of Trade at its annual meeting:

"*Whereas*, the council of the board has appointed six gentlemen to act jointly with the committee of the City Council to give effect to said City Council's resolution; and whereas, in the opinion of this board the establishment of the shipbuilding industry at the port of Halifax would be of the highest advantage, not only to the city, but to the province of Nova Scotia; therefore,

"*Resolved*, That the representatives of this board on such joint committee be, and they are hereby instructed:

"To use their best influence and to vote on said committee to secure the establishment of such shipbuilding industry within the limits of the city of Halifax, and for such purpose the city of Halifax be urged to aid the establishment of such industry by bonus, subvention or otherwise."

Fig. 9.—Art Gallery and Museum.

A WORKINGMAN S COLLEGE.

Minor Notes.

Halifax and St. John are not the only maritime towns aspiring to become great centres of the steel shipbuilding industry. Digby, a Nova Scotia town on the Bay of Fundy, is agitating for a shipbuilding plant. Liberal inducements, besides an excellent free site, could be obtained there. Within 3 miles of Digby are the iron deposits of North Mountain, while within 20 miles are the deposits of Annapolis County, from which the material for iron and steel works could be obtained.

The labors spent on the endeavor to organize the leading stove manufacturers of Ontario into one company have proved vain, and have been abandoned. Dr. McCauley, the Chicago agent of the syndicate that had the matter in hand, left Hamilton for Chicago on the 26th.

It is stated that the great obstacle was the refusal of certain of the ten manufacturing concerns to renew the options that had expired. John H. Tilden of the Gurney-Tilden Company says this was the trouble, not the financing of the undertaking.

The McLaughlin Automatic Air Brake Company, with a capital of $1,000,000, have taken out letters of incorporation under the Ontario Companies act. Its head office is to be Walkerville, Ont. William G. McLaughlin, manufacturer, Kansas City, Mo.; John H. Coburn, Walkerville, and Geo. H. M. Christie, Windsor, Ont., are the provisional directors.

The Peter Hamilton Company, capital stock $250,000, have been incorporated to manufacture agricultural implements at Peterborough, Ont.

The contract for the iron superstructure of the Canadian Pacific Railway bridge over the Red River at Winnipeg has been awarded to the Dominion Bridge Company for $60,000.

A new binder twine factory has been started in Brantford with a capital of $100,000. Last year the Farmers' Binder Twine Company in that city declared a dividend of 100 per cent., and the year before one of 60 per cent. These good profits are attributed to buying material before the advance.

Charles L. Meyer has returned to Ottawa from Chicago, where, he says, he was able to get the capital needed for the blast furnace his company have engaged to establish at Kingston, Ont. In addition to the furnace, he promises that rolling mills will be put up and a roaster for sulphuric ore, also a lead smelter.

According to a dispatch from Sault Ste. Marie to the Toronto *Globe*, the Sultana nickel property, comprising 2640 acres on the nickel range in the townships of Drury and Trill, was sold on January 31 for $250,000. The buyers, the dispatch says, are Charles Neumann and Judge Kraus. They had had the property under option a year before the purchase. The Manitoulin & North Shore Railway, one of the lines being constructed by Mr. Clergue and his associates, is to run right through the property. The mine is 26 miles west of Sudbury.

On January 29 the St. John (N. B.) Iron and Hardware Association held its seventh annual meeting. The following officers were elected: S. Hayward, president; P. McMichael, vice-president; J. J. Barry, secretary-treasurer; R. B. Emerson, W. H. Thorne, Thomas McAvity, directors. On account of the Queen's death it was decided not to hold the annual dinner. C. A. C. J.

The Salem Iron Company.—At Pittsburgh last week two suits were begun in the United States Circuit Court against the Salem Iron Company of Pittsburgh to compel the payment in aggregate of $91,331 damages for alleged failure to carry out certain contracts. The suits were brought by the Lake Superior Consolidated Iron Company of New Jersey and by the Commonwealth Iron Company of Ohio. In the statement filed by the Lake Superior Consolidated Iron Company it is set forth that the defendant company made a contract with the plaintiffs, whereby the former agreed to purchase 30,000 tons of iron ore at the rate of $4.85 per ton. The iron was to be taken from the Minnesota mines of the plaintiffs to some port on Lake Erie, where it was to be transferred to the railroad. The $145,750 was to be paid in 12 installments, but the plaintiffs declare that the Salem Iron Company after accepting and paying for 2543 tons and 1030 pounds of the ore, refused to take the remainder, which had already been transported to Lake Erie. It is claimed that it was impossible to dispose of the ore to any other party at that time, as all orders for iron ore are given at a certain season of the year, and the time was then past. The Lake Superior Consolidated Iron Company, therefore, claim damages amounting to $48,048. The suit of the Commonwealth Iron Company is somewhat similar. It is claimed that the defendant company made a contract to purchase from the plaintiffs 30,000 tons of Granada ore at $5.30 per ton. By agreement, they claim, Lerida ore was furnished instead of Granada. The contract, amounting to $159,000, was to be paid in 12 installments. The plaintiffs aver that after the defendant company had accepted and paid for 5263 tons and 380 pounds of the ore, they refused to accept the remainder, which had been transported to Lake Erie, and was at their disposal; $43,283 damages is claimed.

The Gates Iron Works Noonday Club.

An interesting innovation on the usual method of whiling away the noon hour has been made by the employees of the Gates Iron Works, manufacturers of mining machinery, Chicago. Meetings have for some time been held by a portion of the employees during the noon intermission, at which lectures on educational subjects have been delivered by one of the machinists in the employ of the company.

The originator of the novel experiment is John Johnson, an employee, to whom the idea had been suggested by a series of articles that had appeared in a local daily relative to the utilization of time. At first the meetings were held in the shop office, and were attended only by the clerks, but a desire on the part of a large portion of the employees to participate in the meetings has made it necessary to secure a larger meeting place and the company have placed the machine shop at the disposal of employees who wish to devote a portion of their luncheon hour to entertainment and educational pursuits.

The first meeting in the machine shop, held last week, was attended by 200 workmen, who perched themselves upon pieces of machinery or stood around the speaker, who took a position on an improvised platform. Samuel Fox, a machinist, said to be an authority on astronomy, was the speaker of the occasion, and entertained his audience for a short time, after which an announcement was made that the previous meetings had been so successful that it was thought advisable to form a noon entertainment club. Several of the workmen spoke favorably on the proposition, and an association to be known as the John Johnson Club was formed. A committee composed of employees of the various departments was appointed to provide for entertainment in the future.

As a result of the meeting regular noon-hour entertainments may become a feature of the establishment. The management is heartily in favor of the plan, and it is said will assist the workmen in securing suitable talent so that the entertainments may become profitable and pleasant. Several of the workmen who are musicians have already volunteered their services, and the workmen say they will contrive to have music after lunch if they cannot have while eating, after the fashion of fashionable restaurants.

The Structural Steel Workers' Scale.—Concerns in the Pittsburgh district doing iron and steel structural work, such as the American Bridge Company, McClintic-Marshall Construction Company, Riter-Conley Mfg. Company, Pittsburgh Steel Construction Company and others, are much concerned over the delay in the presentation of the new scale of the Structural Steel Workers to go into effect on May 1. The presentation of the new scale was to have been made several weeks ago. The local union on the first of the year demanded an advance to 33.5 cents an hour for a day of nine hours from the old scale of 27 cents an hour for ten hours' work. After a three days' strike the demand was granted. The contractors were given notice when that scale was signed that it would stand only till May 1, at which time the scale to be adopted by the international union would go into effect. Contractors expect this scale to be a considerable advance over the one signed January 1, and it is a question whether it will be granted as readily as the January scale was. There is much building ahead for the coming season, and the contractors claim to be in the dark as to the wages of the structural workers when figuring on new work. Pittsburgh contractors say that they doubt whether the union will attempt to enforce a uniform scale the country over on account of the great variance in the wages now paid. In Chicago the men receive 50 cents an hour; in New York the price is 45 cents, while in Cleveland and several other cities it is under 30 cents.

Notes from Great Britain.

The Metal Market.

LONDON, January 26, 1901.—We are slowly beginning to see the exact proportions of the slump in metals to which I have alluded on three or four occasions. At the moment, the Midland and Lancashire iron markets are suffering the most. A leading Staffordshire steel maker and blast furnace owner states that he has made more bad debts in the past six months than in 10 years previously, while it is currently stated that the Midland banks are now preparing themselves against quite a number of expected iron trade failures in the coming spring. More blast furnaces are to be blown out unless in the next few weeks there is a material fall in the price of coke. Although it seems evident that the owners of the raw materials have irreparably damaged the trade, yet there are some metal manufacturers who still affirm that, if the price of coal and coke can be brought down at once, business may in some measure be revived. The most striking feature of the week has been the receipt of the accountants' certificate as to selling price under the sliding scale agreement. Of the 12 selected firms for the months of November and December, it appears that the average net selling price was £9 0s. 7.74d. per ton. The following is the output and the average net selling price of the different classes of iron sold:

	Tons.	£	s.	d.
Bars	16,073	9	2	5.91
Angles	844	9	2	10.12
Plates and sheets	971	9	14	4.77
Hoops, strip and miscellaneous	5,245	8	12	0.96

This shows a reduction of $3.50, as compared with the months of September and October, and the wages now stand at $2.50 per ton for puddling and a reduction of 7½ per cent. on wages all round. It is interesting to observe that the total quantity of iron sold by the 12 firms selected amounted to 23,135 tons, a reduction of 3054 tons compared with the previous two months. Naturally buyers again forced down prices, and it is stated on authority that common bars had been sold this week at $34. The better class common bars fetched $37, and probably the average price would be $35. The hoop makers have reduced their standard price from $44 to $41.25. With these forced reductions it is useless to quote the official prices, which still stand absurdly high.

Working Short Time.

Although the depression is most keenly felt in the Midlands and Lancashire, yet almost everywhere short time is being worked by the operatives. Only a small number of the works in the district of Glasgow opened last Monday after the holidays, while all the rolling mills, forges and finished iron works which produce plates, rails, bars and angles in the North of England are working short time. The bridge building works are, however, very busy, working off arrears of orders which had to be postponed in consequence of urgent military orders for South Africa. In the Stockton district the South Durham Steel & Iron Company is the only firm well supplied with orders. It is gratifying to notice, however, that although all round short time is being worked, yet at the present moment there is not a single trade dispute anywhere. One is threatened at Moss Bay, where the men have not received such high wages during the boom as elsewhere and where now the employers are seeking a reduction in order to contend with American competition.

Imported Steel Rails in 1900.

A special statement has been prepared showing the imports into each port of the United Kingdom during 1900 of steel rails. The following figures show the exact extent of the trade with the several countries:

From—	Tons.
Holland	15,317
United States	13,125
Belgium	7,251
Germany	1,796
Canada	356
Italy	135
France	83
Sweden	65
Total	38,128

It should be mentioned that the large amount credited to Holland in the above table is deceptive, as most of the 15,000 tons quoted came from Germany through Holland. Out of the 13,135 tons imported from the United States, 1391 tons were shipped to Manchester and 5427 tons to Liverpool.

American Unwrought Steel.

I have already quoted the official returns of imported unwrought steel during 1900, which amounted to 179,341 tons, as against 77,290 tons in 1899, and 40,231 tons in 1898. Of this amount no less than 157,851 tons came from America, as compared with 59,374 tons and 29,374 tons in the two preceding years. By far the largest quantity was landed at Liverpool, 51,870 tons coming from America. A considerable proportion of this amount went into either Sheffield or its neighborhood. Nine thousand six hundred and eighty-seven tons came direct to London, while 20,000 tons of steel from America were discharged at each of the following ports: Manchester, Newport, Swansea and Glasgow. The American steel which went to Newport and Swansea was largely bought by tin plate manufacturers.

Indian Import Duties.

The new Indian valuation tariff has now been issued by the Indian Government. A careful examination of it shows that the Government is anxious to encourage the importation of machinery and metals. The duty is free on all machinery, but not including tools and implements to be worked by manual or animal labor. Only component parts of the machinery, such as are indispensable to the working of machinery, are admitted free of duty. I append herewith some items of interest to American engineers. The valuation is stated in rupee and anna:

Names of articles.	Per.	Tariff valuation. r. a.	Duty. Per cent.
Iron, angle and T, other than Lowmoor or Swedish (if galvanized)	Ton.	190 0	1
Iron, channel (if galvanized)	Ton.	Ad val.	1
Iron, bar, Lowmoor	Ton.	375 0	1
Iron, bar, Swedish	Ton.	165 0	1
Iron, bar, Swedish nail rod, also round rod under ½ inch diameter	Ton.	170 0	1
Iron, bar, other kinds	Ton.	115 0	1
Iron, beams, joists, pillars, girders, bridge work and other such descriptions of iron imported exclusively for building purposes	Ton.	Ad val.	1
Iron, pipes and tubes, including fittings therefor, such as bends, boots, elbows, tees, sockets, flanges and the like	Ton.	Ad val.	1
Iron, rails, chairs, sleepers and fish plates, other than those described in No. 67, also spikes (commonly known as dog spikes), switches, crossings, lever boxes, clips and tie bars	Ton.	Ad val.	1
Iron, rivets and washers (Lowmoor)	Cwt.	20 0	1
Steel, anchors and cables	Cwt.	Ad val.	1
Steel, angle, channel and spring	Cwt.	Ad val.	1
Steel, bars and blooms	Cwt.	Ad val.	1
Steel, beams, joists, pillars, girders, bridge work and other descriptions of steel imported exclusively for building purposes	Cwt.	Ad val.	1
Steel, nuts and bolts and rail rods	Cwt.	Ad val.	1
Steel, pipes and tubes, including fittings therefor, such as bends, boots, elbows, tees, sockets, flanges and the like	Ton.	145 0	1
Steel, rails, chairs, sleepers and fish plates, other than those described in No. 67, also spikes (commonly known as dog spikes), switches, crossings, lever boxes, clips and tie bars	Ton.	Ad val.	1
Steel, T bars	Ton.	135 0	1
Steel, wire rope	Ton.	Ad val.	1

S. G. H.

Great Rod Rolling Records.—In January the Rankin works of the American Steel & Wire Company, at Rankin, Pa., in 50 turns made 10,230 gross tons of 2240 pounds of No. 5 rods, an average of 204.6 tons to the turn. This beats all previous records for rod rolling, not only at these works, but at any other rod mill in the United States, without a single exception. In January the Braddock works of the American Steel & Wire Company, in 50 turns made 6634 tons of No. 5 rods, also breaking all previous records at these works.

Bids on Navy Supplies at the Boston Yard.

At the Bureau of Supplies and Accounts, Navy Department, bids were opened on January 29 for supplies for the Boston Navy Yard, as follows:

Bidder 1. Flather & Co., Nashua, N. H.
2. Fitchburg Machine Works, Fitchburg, Mass.
3. Niles Tool Works Company, Hamilton, Ohio.
4. Walter H. Foster, 126 Liberty street, New York City.
5. Brown Hoisting Machinery Company, 26 Cortlandt street, New York City.
6. American Tool Works Company, Cincinnati, Ohio.
7. Garvin Machine Company, Spring and Varick streets, New York City.
8. American Hoist & Derrick Company, St. Paul, Minn.
9. J. B. Kendall, Washington, D. C.
10. Jas. J. McCabe, 14 Dey street, New York City.
11. The Fairbanks Company, 311 Broadway, New York City.
12. Industrial Works, Bay City, Mich.
13. Browning Engineering Company, Cleveland, Ohio.
14. Waltham Watch Tool Company, Springfield, Mass., informal; no guarantee.
15. Carrington, King & Co., 79 Commercial street, Boston, Mass.
16. J. R. Van Dyck, 136 Liberty street, New York City.
17. I. S. Van Winkle & Co., 31 Beale street, San Francisco, Cal.
18. Manhattan Supply Company, 160 Duane street, New York City.
19. Pittsburgh Forge & Iron Company, Pittsburgh, Pa., informal; no guarantee.
20. Midvale Steel Company, Box 1606, Philadelphia, Pa.
21. Hendey Machine Company, Torrington, Conn.
22. New Haven Mfg. Company, New Haven, Conn.
23. Monongahela Iron & Steel Company, Pittsburgh, Pa.
24. Puritan Machine Company, Fitchburg, Mass.
25. M. B. Gaston & Sons, Beloit, Wis.
26. Brown & Sharpe Mfg. Company, Providence, R. I.
27. Consolidated Machine Specialty Company, 152 Purchase street, Boston, Mass.
28. Standard Scale & Supply Company, Pittsburgh, Pa.
29. Dietrick & Harvey Machine Company, Baltimore, Md.
30. Metts & Merrill, Saginaw, Mich.
31. Northern Engineering Works, Detroit, Mich.
32. Hill, Clarke & Co., 156 Oliver street, Boston, Mass.
33. Jones & Lamson Machine Company, Springfield, Vt.
34. Pratt & Whitney Company, Hartford, Conn.
35. Standard Oil Company, 26 Broadway, New York City.
36. P. G. Chase, 72 Kilby street, Boston, Mass.
37. Atha Steel Company, Newark, N. J.
38. Becker-Brainard Milling Machine Company, Hyde Park, Mass.
39. Cincinnati Milling Machine Company, Cincinnati, Ohio.
40. The Bullard Machine Tool Company, Bridgeport, Conn.
41. William M. Graham, Twenty-fourth and Vine streets, Philadelphia, Pa.
42. Prentiss Tool & Supply Company, 115 Liberty street, New York City.
43. Manning, Maxwell & Moore, 85 Liberty street, New York City.
44. Edw. A. Temple, 100 William street, New York City.
45. The Watson-Stillman Company, East Forty-third street, New York City.
46. Bement, Miles & Co., Twenty-first and Callowhill avenue, Philadelphia, Pa.
47. Drew Machinery Agency, Manchester, N. H.
48. U. Baird Machinery Company, Pittsburgh, Pa.
49. Morgan Engineering Company, Alliance, Ohio.
50. Arthur J. Lockwood, 12 Platt street, New York City.

Class 1. One 26-inch by 24-foot back geared engine lathe—Bidder 11, $867; 43, $900, $930 and $1165; 22, $974; 24, $1115; 6, $937.10 and $1052.30; 48, $1250; 3, $1600; 2, $1275; 40, $1775 and $1855.

Class 2. One 24-inch back geared engine lathe—Bidder 22, $794; 6, $841.80; 11, $907; 48, $925; 3, $990; 24, $1065; 43, $1030; 1, $1095; 2, $1170; 32, $1304; 21, $1304.

Class 3. One 20-inch by 24-foot gap lathe—Bidder 3, $515; 7, $520; 43, $562 and $870; 32, $644; 1, $710; 24, $750.

Class 4. Three 16-inch back geared engine lathes—Bidder 11, $1386; 22, $1722; 6, $1757.70; 43, $2340; 21, $2373; 32, $2373.

Class 5. Three 16-inch back geared engine lathes—Bidder 34, $422 (?); 7, $795; 11, $1011; 6, $1111.20; 48, $1185; 10, $1150; 22, $1245; 43, $1260; 24, $1275; 32, $1473; 21, $1473.

Class 6. One 2 x 24 inch screw threading turret lathe—Bidder 3, $1129; 43, $1300; 33, $1379.

Class 7. One duplex milling machine—Bidder 32, $674; 3, $675; 7, $675; 43, $675.

Class 8. One 20 x 18 inch universal milling machine—Bidder 11, $599; 3, $715; 38, $795.50; 7, $800; 39, $810; 26, $840; 48, $840.

Class 9. One 23 x 17½ inch universal milling machine—Bidder 11, $599; 38, $795.50; 10, $825; 39, $846; 7, $870; 3, $895; 21, $996; 48, $977; 26, $977 and $1022.

Class 10. One 33 x 19 inch universal milling machine—Bidder 38, $1429; 39, $1636; 26, $1648; 48, $1648; 7, $1690.

Class 11. One 48 x 19 inch plain milling machine—Bidder 11, $900; 10, $985; 38, $1073; 4, $1112 and $1337; 7, $1205; 26, $1518; 48, $1518.

Class 12. One 24-inch pillar shaper—Bidder 11, $410; 1, $440; 10, $450; 3, $482; 24, $485; 43, $475 and $500; 48, $515; 32, $554; 21, $554; 4, $618 and $653.

Class 13. One 20-inch pillar shaper—Bidder 11, $299 and $336; 1, $335; 10, $400; 43, $408 and $422; 3, $424; 24, $425; 21, $456; 32, $456; 48, $460.

Class 14. One 15-inch pillar shaper—Bidder 1, $250; 11, $256 and $246; 3, $307; 10, $320; 34, $344; 24, $350; 48, $355; 43, $354 and $370; 21, $356; 32, $356; 4, $417.

Class 15. One 18-inch surface grinding machine—Bidder 26, $492.68; 48, $492.68.

Class 16. One 20-inch by 8-foot universal grinding machine—Bidder 4, $1798 and $1828; 26, $1954.94; 48, $1954.94.

Class 17. One vertical six-spindle turret drill—Bidder 48, $195; 43, $196; 32, $197; 3, $205; 7, $208.

Class 18. One 65-inch universal radial drill—Bidder 11, $945; 3, $1020; 43, $1049; 6, $1135.

Class 19. Two 12-inch sensitive drills—Bidder 3, $206; 11, $216; 48, $220; 7, $236.

Class 20. One 51-inch boring and turning mill—Bidder 43, $1680; 3, $1780; 40, $1850; 42, $1890; 46, $2150.

Class 21. One 60-inch automatic gear cutting machine—Bidder 34, $1865 and $2164; 43, $2075 and $2430; 26, $2305; 48, $2305

Class 22. One 48-inch by 16-foot planer—Bidder 43, $4385; 29, $4440.

Class 23. One 2½ x 19 inch key seating machine—Bidder 3, $508; 7, $515; 42, $520; 43, $520; 4, $535; 30, $535; 47, $595.

Class 24. Two speed controllers—Bidder 27, $594.75.

Class 25. One magnetic metal separator—Bidder 43, $200; 32, $202.20; 7, $205; 3, $207; 48, $255.

Class 26. One scroll sawing machine—Bidder 32, $73.90; 48, $90; 47, $94.25.

Class 27. One hand shear—Bidder 48, $105; 3, $109; 43, $119.

Class 28. One double angle shears—Bidder 48, $1950; 4, $1175; 32, $1976; 3, $2145; 42, $2295; 43, $2375.

Class 29. One 2½-inch heading, upsetting and forging machine—Bidder 3, $2990; 48, $3875; 11, $3975.

Class 30. One cold saw cutting off machine—Bidder 34, $623; 48, $1275; 4, $1245, $1310 and $1395; 16, $1325; 36, $1340; 43, $1510; 41, $1765.

Class 31. One 4000-pound single stand steam hammer—Bidder 46, $2995; 49, $3975; 43, $3125 and $3650.

Class 32. One locomotive crane—Bidder 31, $4685; 12, $4980; 47, $5125; 8, $5500; 13, $5,950; 5, $6,280.

Class 33. Two platform scales—Bidder 25, $57.40; 11, $59.84; 28, $67; 18, $74.80.

Class 34. 400 pounds ingot tin—Bidder 18, $128.

Class 35. American refined iron—Bidder 23, $1102.20; 17, $1182.36.

Class 36. Soft and bar steel—Bidder 9, $913.92; 44, $924.80; 50, $1055.36; 37, $1093; 17, $1213.12; 18, $1468.80; 20, $2040.

Class 37. Spruce oars—Bidder 18, $686.40; 15, $780; 47, $821.60.

Class 38. One hydraulic mannole punching machine—Bidder 45, $2875; 49, $3850; 46, $3975.

Class 39. 100,000 gallons naphtha distillate—Bidder 35, $6,250.

The Quincy Engine Works.—The Quincy Engine Works, Quincy, Ill., have been incorporated with a capital stock of $250,000, for the purpose of manufacturing machinery, tools, engines, motors and appliances. The incorporators are Thomas Hill, Wm. H. Govert and P. B. Williams. The company will make a specialty of building a steam engine invented by E. F. Williams, which is said to have a number of exceptionally meritorious features. The company will require about 8 acres of land for their plant. A selection of a site will soon be made, and the erection of buildings will begin as early in the spring as the weather will permit. It is expected that the machinery can be secured and installed by July 1, to enable manufacturing operations to begin at that time. The capital has been secured entirely in Quincy, the amount having been oversubscribed $20,000 by the enthusiastic citizens.

The Buffalo Forge Company have recently placed upon the market an extremely novel folding forge, which by reason of its light weight and small compass, when knocked down and packed within its case, renders it a valuable article for army and navy use. The outside dimensions of the case into which it packs are but 22½ x 27½ x 10 inches. The forge is designated as the Buffalo Army and Navy forge, and as may be mentioned is in use in the Imperial Japanese Navy. The same company recently received a rush order for 100 of these forges for use in the United States Army in the Philippines. Owing to the necessity of shipping these forges on a certain transport only three days were given in which to fill the order, but the forges were completed and placed upon the transport in the specified time.

The Armstrong Gang Planer Tool.

The Armstrong gang planer tool herewith illustrated is especially adapted for surfacing large castings, and on this class of work it will effect a saving of 50 to 75 per cent. in the time required to do the same job with a single point tool. Fig. 1 is an illustration of the tool.

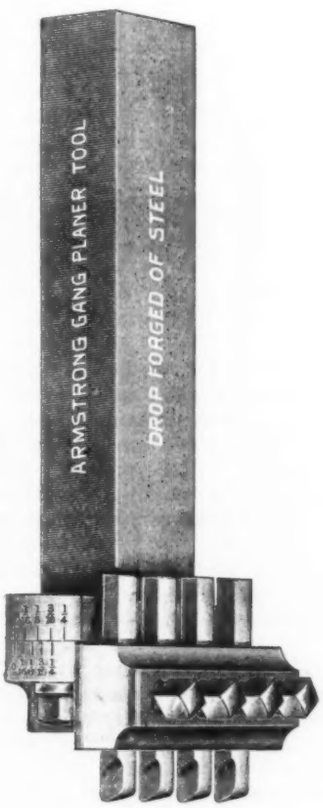


Fig. 1.—Complete Tool.

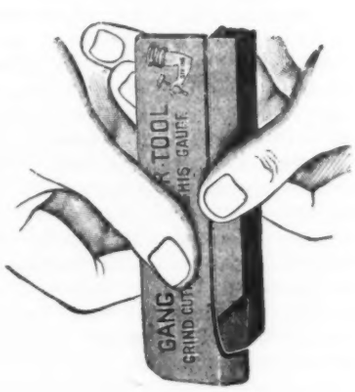


Fig. 3.—The Cutter Form Gauge.

ters are made from stock sizes and shapes of self hardening steel. In grinding the cutters it is of course necessary to obtain uniformity of shape and clearance. To enable this to be done easily and accurately the company furnish with each tool a cutter form gauge, Fig. 3, which is of great assistance in grinding cutters to proper shape to give best results. It is believed that this gauge will obviate the difficulty experienced in having cutters ground to uniform shape and thus overcome one of the greatest obstacles for the successful operation of tools of this character.

The tool is made in three sizes, carrying four, five and six cutters respectively. The smallest size has a shank 1⅛ x 1½ inches, is 9½ inches in length and weighs 8 pounds. The middle size is 1½x2 inches in size of shank,

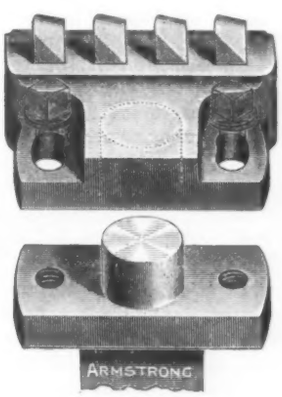


Fig. 2.—The Head and the Shank.

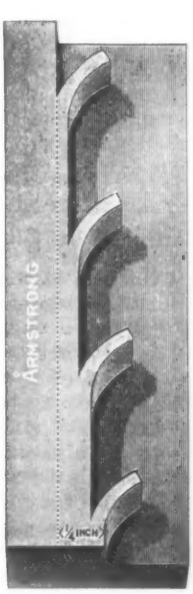


Fig. 4.—The Work of the Tool with Four Cutters

THE ARMSTRONG GANG PLANER TOOL.

As shown in Fig. 2 the head of the tool is solidly secured to the shank, on which it swivels to a limited degree by means of a deep and closely fitted tongue and socket, and when set its position is fixed by means of two steel collar screws. The head is graduated, thus enabling the tool to be quickly and accurately set to any desired feed. Both shank and head are drop forged of steel and all parts are hardened. The set screws are tool steel tempered on the point. Fig. 4 shows a cut taken with a four-cutter planer tool set to ¼-inch feed, distributing the cut 1-16 inch on each cutter. Each chip being comparatively light, a planer with this tool will carry with ease a feed and depth of cut much greater than would be possible when using an ordinary tool, and there is moreover much less tendency to "break out" at the end of the cut. The cutters are made in three sizes; the smallest size is 1¼ inches in length and weighs 17 pounds; the largest size is 2 x 2½ inches in size of shank, 13½ inches in length and weighs 34 pounds. They are manufactured by the Armstrong Bros. Tool Company, 106 and 108 West Washington street, Chicago.

The Winton Motor Carriage Company of Cleveland have completed and are preparing to ship three automobile delivery wagons to Australia. They were ordered by the Australian Government, and are to be used in collecting and delivering mail. The vehicles weigh 1700 pounds, and are equipped with 9 horse-power gasoline engines. The Winton Company are figuring on a number of similar vehicles to be used in the London mail delivery system.

The Bertrand Process.

The following table summarizes the analyses of a heat of steel made at Kladno, Bohemia, under the Bertrand process timed and sampled lately by Arthur W. Richards of Bolckow, Vaughan & Co., Middlesbrough:

Analyses of Heat of Steel Made by the Bertrand Process.

			Metals.				Slags.		
	Time taken.	Description of sample.	Combined carbon.	Mangan.	Silicon.	Phosphor.	Iron.	Silica.	Phosphoric acid.
Time, 2 hours 22 minutes.	10.00 a.m.	Iron from first ladle	3.60	0.47	0.56	1.33	....	....	....
	10.11 a.m.	Iron from second ladle	3.45	0.42	0.46	1.39	....	....	....
	10.45 a.m.	After two feeds ore and lime first furnace	3.55	0.42	0.34	1.30	....	....	....
	11.05 a.m.	After one feed ore and lime first furnace	3.45	0.42	0.15	0.93	11.20	20.00	15.67
	11.25 a.m.	After one feed ore and lime first furnace	3.05	0.10	0.04	0.39	13.20	15.66	19.41
	11.45 a.m.	After one feed ore only first furnace	2.65	0.058	0.04	0.043	15.40	13.66	20.90
	12.04 p.m.	After one feed ore only first furnace	2.80	0.058	0.04	0.043	12.00	14.66	20.30
	12.22 p.m.	Running from first furnace	2.50	0.10	0.04	0.087	6.00	19.16	18.88
	1.00 p.m.	From second furnace	0.81	0.058	0.04	0.049	9.50	19.00	9.92
	1.20 p.m.	From second furnace	0.35	0.05	0.02	0.02	18.00	14.66	9.70
	1.40 p.m.	From second furnace	0.19	0.05	0.02	0.01	13.50	11.00	7.16
	2.00 p.m.	From second furnace							
Here ferro has been added.			0.18	0.23	0.02	0.01	13.50	11.00	5.67
	2.22 p.m.	Runnng from second furnace	0.15	0.32	0.018	0.01	13.50	13.00	4.99
		Pit sample	0.23	0.28	0.02	0.01	....	....	....

The Bertrand process, as practiced at Kladno, consists in pouring the liquid pig from the blast furnace into an open hearth furnace, where it is treated with lime and ore, the liquid pig carrying about 3.60 of carbon, 1 per cent. of silicon, 1.5 per cent. of phosphorus and 0.40 per cent. of manganese. After about 2½ hours the preliminary work is finished and the metal flows into the finishing furnace. The metal then contains practically nothing but carbon, which is oxidized in the finishing furnace in about the same time as the work lasts in the primary furnace—*i. e.*, 2½ hours. Thus eight heats are made in 24 hours, or an average of 45 heats weekly, the weight of the heat being 16 to 17 tons.

The yield is 102 per 100 of pig charged, a plus of 2 per cent. Since the metalloids in the pig, which are eliminated by oxidation, the carbon, silicon and phosphorus amount to 6 per cent., therefore 8 per cent. of metallic iron is reduced from the ore added. The best done so far was the average of the month of December, when the yield was 103.40 per 100 of metal charged.

The Machinists in Cleveland.

A dispatch from Cleveland states that the local officers of the International Association of Machinists are making every effort to secure new members in anticipation of trouble on May 1, when it is stated that the nine-hour day will be demanded in compliance with the terms of the agreement made by the National Metal Trades Association. Only about six out of the hundred or more manufacturing concerns employing machinists in that city are affiliated with the National Association, and Cleveland will probably see a harder struggle for the concession than any other city. The Cleveland Metal Manufacturers' Association, with which a number of the leading concerns in that city are affiliated, will in all probability make a strong fight against the adoption of the nine-hour day, as they did last year.

President O'Connell of the International Association of Machinists is quoted in Cleveland as saying that preparations are being made by subordinate lodges in all parts of the United States and Canada to enforce by general strike, if necessary, a demand for nine hours on May 1. He stated that between 40 and 50 per cent. of the 50,000 members of the union are employed by the members of the National Metal Trades Association, who will concede the nine-hour day on that date, and that other employers will probably do likewise, but they propose to make an attempt to enforce the shorter day in every shop in the country. He admitted that it would probably be necessary to have a general strike to accomplish the purpose.

The union bricklayers and masons at Youngstown, Ohio, have served notices on the contractors that, commencing March 1, eight hours will constitute a day's work, and half time to be paid for overtime and double time for Sundays and holidays. The wages of bricklayers are $4, and stone masons $3.50 per day.

The Niagara Tin Smelting Company.

The Niagara Tin Smelting Company have been organized to operate and mine tin deposits in South Dakota, and to erect and maintain a large tin smelting and reduction works at Niagara Falls. The company's mines are said to be on the line of the Burlington & Missouri road, near Iron Station, South Dakota. The company's initial concentrating plant at their mines will have a daily capacity of 150 tons of ore, from which 8 or 10 tons of high grade concentrates, 55 to 60 per cent. of metallic tin, will be produced and shipped to the electric smelting works to be located at Niagara Falls, where it is said the company have secured a desirable site.

For the purpose of erecting the concentrating and smelting plants and providing working capital 3000 shares of the preferred stock are now offered at par, with a bonus of two shares of common stock; when sold 5000 shares more will be offered at par with a bonus of one share of common with each share of preferred. Subscriptions are being received by the company's fiscal agent, Allan G. McDonnell, 63 Wall street, New York; North American Trust Company, New York, registrar and depositary agent. Of the subscription 20 per cent. is to be paid on application and 20 per cent. on the 15th of February, March, April and May.

The directors of the company are: Thomas B. Adams, treasurer American Smelting & Refining Company; Robert Avery, lawyer, Maj.-Gen. U. S. A., retired; John Putnam Cobb, secretary-treasurer Denver-Southwestern Railroad; Allan G. McDonnell, investment securities, New York; Cornelius Van Cott, postmaster New York; Hon. George T. Werts, ex-Governor New Jersey, president New York & New Jersey Bridge Company; Rollin J. Furbeck, broker, New York; Charles A. Pooley, lawyer, Buffalo; Lawrence Waterbury, Waterbury Rope Company; Henry T. Wills, vice-president Federal Finance Company, Limited; James Gilfillan, ex-Treasurer United States. The officers of the company are: President, Robert Avery; vice-president, Allan G. McDonnell; treasurer, James Gilfillan; secretary, Aquila W. Wanmaker; registrar and depository agent, North American Trust Company, New York.

O. E. D.

Drawback Tin Plate and Wages.—In a recent conference between the superintendent of the Niles plant of the American Tin Plate Company, at Niles, Ohio, and the Mill Committee of the Amalgamated Association, the question of foreign trade and rebate was discussed. The rebate trade in tin plate is a most important question to the workers and they are making an effort to abolish it. As is well known, it is possible now for a company by exporting their finished product in tin plates purchased abroad to make a saving over the cost based on domestic prices. The practical question is whether any concession can be secured in labor to enable domestic producers to supplant the product now imported and sent out later in manufactured forms under the drawback.

J. B. Doan & Co. will continue their machinery business at 68 and 70 South Canal street, Chicago, until May 1, when they expect to move into more commodious quarters to meet the growing demands of their trade.

The Iron Trade and Coal in Scotland.

Steam Turbine Steamers.

In connection with what has appeared in these columns lately about steam turbines, it will interest readers of *The Iron Age* to learn that turbine steamers are about to be introduced on the Clyde for passenger service. At all events, in the coming summer a beginning is to be made with one in the pleasure coast traffic of our beautiful Firth, or estuary. A syndicate has been formed of Dennys, the shipbuilders; the Parsons Company (who will provide the machinery), and a well-known river boat owner, who among them should be able to devise the right kind of craft for the purpose. For this experimental boat no higher speed than 20 knots is contemplated, and the general style of hull and equipment will be much like that of the well-known Clyde River boats of the most modern type. The daily run at present intended will be from Greenock railway terminus to Fairlie (another railway terminus in Lyrshire), and thence across to Campbeltown in Kintyre.

The Rivet Combine.

The rivet combine is not proving at all popular among shipbuilders, as, indeed, how could it, notwithstanding the reduction of £1 per ton announced as soon as the combination was effected? We said at the time that this downward move had a double meaning—to encourage trade and to warn off competitors. But the latter meaning also was double, because the formation of the combine has stimulated a counter combine among the shipbuilders, and it was the first hint of this that prompted the Rivet, Bolt & Nut Company to disarm opposition by giving to their principal customers practical evidence that amalgamation does not necessarily mean monopoly prices and may be made to operate to the advantage of the consumer. The shipbuilders, however, are by no means mollified. They say they know quite well how to value the present concession, and they do not mean to be themselves at the mercy of any monopolists. It is all very well to reduce rivets just now by £1 per ton as a matter of policy, but what is to prevent the combine in the future, and at any times of pressure, from putting up the price even above the equivalent at which English rivets can be imported, plus railway carriage and all charges? The two or three small concerns not yet in the combine could do practically nothing to preserve the shipbuilders from extortion. Therefore about 17 of the shipbuilders in the Clyde district have formed a defensive league or syndicate, and are preparing to erect an entirely new rivet works for the supply of their own needs and of such other shipbuilders as choose to deal with them. This works will be equipped on the most modern and perfect principles, and with the latest and most improved machinery, which will enable the shipbuilders' combine to turn out rivets at about 10 per cent. lower cost than the rivet makers' combine can do. It is reported that John Inglis of the firm of A. & J. Inglis, shipbuilders and engineers, will be chairman of the shipbuilders' syndicate. It is an interesting movement, and suggests possible extensions in the future in connection with ship plates and other material. The shipbuilders of the Clyde are, as a rule, men of large means, and they can among them command practically unlimited capital.

The Coal Situation.

Our leading iron and steel works are still keeping their gates closed, making a most unwarranted prolongation of the annual holiday, and as there are also a dozen blast furnaces blown out since the new year, the industrial consumption of coal has been reduced to a minimum. And as the weather has been and is exceptionally mild, the domestic consumption is also at a minimum, and as the spring approaches the consumption for gas making purposes is declining, and everything, then, points to a great reduction in coal prices even beyond that which has been already effected. The reduction would have been greater by this time but that there was no accumulation of stocks at the pits, and when the colliers resumed working after the New Year holidays there were some arrears of shipping contracts to be worked off. The Scotch exports of coal last year were 1,943,000 tons in excess of those of 1899, and even 1,213,246 tons in excess of those of 1898, the year when the Welsh strike, extending over four or five months, diverted so much of the Welsh export trade to Scotland. The excess in the foreign shipments last year was 1,603,969 tons, the balance of the 1,943,000 tons increase being sent coastwise. Now this increase in the foreign coal exports of last year was due to the fact that Scotch prices at no time rose to such extravagant figures as Newcastle and Cardiff prices. As a matter of fact, Scotch coal was relatively the cheapest coal in the United Kingdom during the greater portion of the year, and thus Scotch exporters and coal owners were enabled to scoop in a larger amount of foreign orders than they were ever able to do before. In their eagerness after this business, however, the interests of home consumers were given a back seat, and iron and steel makers especially were made to suffer. They do not intend to suffer any more and are now sitting tight. It would need a very large addition, indeed, to the abnormal exports of 1900 to enable coal owners to make up for the suspension of the home industrial consumption. There is no possibility of such an increase. There is no likelihood that the exports of last year will be maintained. There are already indications that the volume of shipments in comparison with last year has begun to decline.

Therefore coal prices in Scotland have become very irregular, varying with the position of the colliery as to home and export contracts. New business is not to be secured without cutting of prices, and not much of it at that, but freights have declined so low that it is possible that more export orders may come dropping in for a while. Prices may be called about 6 shillings per ton down from top, and about 1 to 2 shillings from the beginning of last year.

Miners' Wages.

The Associated Coal Masters had a meeting this week at which they resolved that, "This meeting, looking to the present state of the coal market and of the iron and steel and other trades in the country, unanimously resolves that a very substantial reduction of miners' wages is urgently needed, and instructs its representatives on the Conciliation Board to arrange that the board be immediately convened to consider the same." What is meant by "a very substantial reduction" has not been explicitly stated, but it is said that some coal masters call for a reduction of 2 shillings per day on the maximum rate which the colliers are now enjoying under an agreement which expires on January 31. The colliers say that as prices were revised considerably after they got their last advance in wages, the coal masters can well afford to abate prices a good bit further without touching wages at all. A meeting of the Conciliation Board has been summoned for next week to deal with the matter, and if it fails to effect an arrangement between parties we shall get into very troubled waters.

The immediate prospect, then, is rather a critical one for the iron and steel trades. If a reduction in miners' wages is agreed to, then they will renew their pressure for further reduction in coal prices with success. But if the men refuse any reduction and a strike or lockout is threatened, then iron and steel makers will have to decide between resuming and suspending operations. Several of the works were to be restarted next week, but it is probable now that they may be kept closed until the result of the coal conference is known.

The Executive Committee of the Engineering Employers' Federation (which, though it extends over the whole United Kingdom, has its headquarters here) are holding a conference this week with delegates of the Amalgamated Society of Engineers on the subject of some differences that have arisen in the trade. One point affects the wages of seagoing engineers, but there is no serious point at issue affecting the whole industry, and the conference is believed to be proceeding amicably.

B. T.

Information from Berlin states that a company have just been formed in that city under the title of the Westinghouse Electricitats Actiengesellschaft, to carry out electrical installations of all kinds on Westinghouse lines.

Foundry Iron.*

BY CAPTAIN HENNING, IMPERIAL ARTILLERY, BERLIN, GERMANY.

One of the commonest arguments against chemistry in the foundry is the well-known fact that irons with the identical composition may show widely different physical properties, and, similarly, good castings of a given kind may vary considerably in their composition. The importance of this situation makes it imperative to trace the causes for the apparent contradiction.

In every case of this kind which has come to my notice, whenever the pig iron showed the proper analysis the blame has been placed upon the foundry. Poor molding, cold iron, unequal cooling, abrupt change of section, trouble in the place from which the test pieces were cut or difficulties in making a separate set of test bars, are considered as the primary causes of failure to see predictions carried out. It is also known that the cupola itself has a great influence on results, for with the same mode of operations and material one day's run may be quite different from the other.

My own experience in one foundry has shown me that different shipments of one brand of iron, in spite of a practically identical composition, may produce quite different results and that the foundry will not be to blame therefor. This particular foundry was accustomed to work so painfully exact that the conclusion was forced upon all of those interested that the root of the evil was to be looked for in the blast furnace. It is a well understood fact that even with the most uniform burden a blast furnace cannot make absolutely uniform pigs so far as their composition is concerned, yet the end product will be comparatively more homogeneous than a cupola process could make it, for the quantities are much larger and the process is a continuous one. If, now, the greatest care is taken in running the cupola and handling the molten metal the unavoidable differences in composition in the castings made will be found to be quite unimportant if only the same care is taken with the burden in the blast furnace.

With a pig iron thus carefully made I have had no trouble whatever in producing a perfectly satisfactory run of castings where the composition ranged from 3.50 to 3.75 total carbon, 0.27 to 0.52 combined carbon, 2.62 to 3.22 silicon, 0.98 to 1.18 manganese, 0.60 phosphorus, 0.03 sulphur and 0.02 copper. The mixtures were naturally regulated very carefully with reference to pig and scrap. The percentage of impurities ranged from 7.50 to 8.10 per cent., the iron running 92.475 per cent. on an average. Whenever the percentage of impurities exceeded 8, sending the iron below 92 per cent., the castings would become undesirable, porous and weak. When the impurities reached 9 per cent. and over (I have sometimes had 9.36 per cent., which meant that the iron dropped below 91 per cent.) the castings were unfit for use.

In my estimation the above limits are not absolutely final oues, for circumstances may circumscribe them much more closely. That the quality of the castings must suffer when the percentage of impurities rises is perfectly natural, but even with the same percentage of iron present, as, for instance, 92.475, as given above, or 92.22 per cent., as in another case where the impurities were 7.78, the difficulties may be greatly increased when any particular impurity goes up unduly. For instance, sulphur and copper may be too high, manganese, silicon and carbon too low.

Where the same brand of iron was used continuously and the quality of the castings gradually deteriorated in spite of a proper pig iron composition, the answer was more difficult. The determination of the iron contents finally solved it. This was found to have gradually dropped from 92.475 per cent. down to 91.0 per cent. and even below, and resulted from changes in the furnace burden. It was found that in the hope of improving the pig iron for foundry purposes and getting a specially fine fracture the carbon was brought up to 4 per cent., the silicon from 4.10 to 4.34 per cent., manganese to 1.23 per cent., phosphorus 0.6 per cent., sulphur 0.055 per cent. and copper from 0.02 to 0.10 per cent.

As I know of pig irons which are sold as among the best and still contain 4.9 per cent. total carbon, silicon 2 to 2.50 per cent., manganese 0.6 to 0.7 per cent., phosphorus 0.94 to 1.20 per cent. and sulphur 0.10 to 0.14 per cent., it is not to be wondered at that the results would be poor. Where the percentage of iron is dropped down to 80.65 per cent., instead of being 92 per cent., castings must be failures. The tendency of German furnaces is to burden the furnace to produce a maximum amount of silicon. The result is a maximum of other things not so desirable, and the complaints heard so often about bad iron are fully justified.

The trouble with furnacemen seems to be the all too frequent practice of using mill cinder in the burden. This of course promotes smoother running on the part of the furnace, helps to avoid explosions and cheapens the run. If this slag and cinder is added judiciously it certainly helps the foundrymen, but how few of them exercise the necessary care. My own experience indicates that irons made with the use of plenty of cinder for washing purposes furnish a foundry pig iron which is unreliable, weak, and of very little value for critical work when compared with the honest pig irons.

From the above remarks we will see that chemical and physical investigations are of great value to the foundry industry and that the same class of investigations are equally necessary at the blast furnace if good results are to follow regularly.

For a proper exchange of opinions and for purposes of record all chemical and physical investigations should be conducted on standard lines. Uniformity in test bars and methods of analysis is very essential not only where simple information is wanted but also for trade purposes. Fortunately Europe and America are working hand in hand in this direction.

If, as it seems, there is a general demand on the part of consumers to get a better grade of castings, be it through an improvement of the cupola product or in the original pig irons used, this demand will have to be satisfied or attention will be turned in a still greater measure to furnace iron and steel castings. A comparison of the analyses mentioned above with those which follow will show this.

Cold blast charcoal iron usually runs 3 to 3.50 per cent. carbon, 0.60 to 2 silicon, 0.40 to 1 manganese, 0.15 to 0.25 phosphorus and 0.02 to 0.04 sulphur, or 4.17 to 6.97 per cent. impurities and 95.83 to 93.21 per cent. iron. Compared with the pig iron discussed in the early part of this paper a marked improvement may be readily seen. Steel castings similarly show only 0.74 to 1.44 per cent. impurities and 99.86 to 98.56 per cent. iron. It is evident that coke irons as now produced show a tendency to slip through altogether too great a percentage of impurities, and indeed America has recognized this fact by an enormous expansion of its steel casting industry.

In closing this article I beg to acknowledge the disinterested kindness and assistance rendered me by the management of the Zawadyki Foundry, by General Manager Esser of the Upper Silesian Railroad Company, and the laboratories of Dr. Carl Heyer in Dessau.

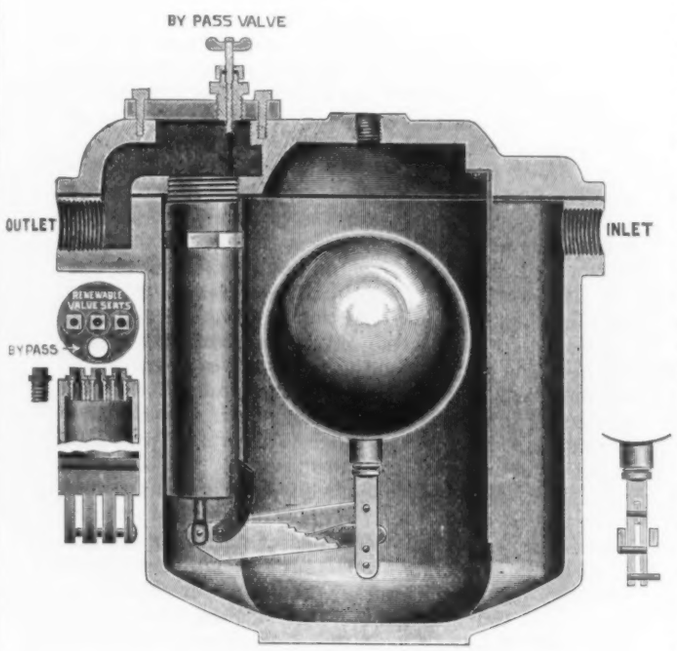
*Read before the American Foundrymen's Association.

An Iowa Iron Ore Deposit.—The Waukon Iron Company of Waukon, Iowa, are developing a large deposit of brown hematite covering about 350 acres. Shipments are being made to Omaha to the extent of 60 or 70 tons per day. The deposit lies on level limestone, and is covered by only 2 or 3 feet of stripping. The company were organized last spring under the laws of the State of Iowa, with a capital of $50,000, all of which has been expended in the exploration work and for the installation of a crushing and washing plant. The ore ranges from 50 to 52 per cent. of metallic iron from 10 to 15 per cent. silica, 1 to 1½ per cent. manganese and 0.10 to 0.13 per cent. phosphorus, sulphur being low. The company are considering the advisability of increasing the capital stock and putting up a blast furnace for the reduction of the ore. As yet, however, no decision has been reached as to which point will be the best for the assembling of materials and the distribution of the fin-

ished product. The officers of the company are D. J. Murphy, president; C. H. Earle, vice-president; G. A. Nehrhood, secretary, and S. H. Eddy, treasurer.

The Wright Emergency Steam Trap.

The steam trap made by the Wright Mfg. Company of Cleveland, Ohio, is intended to discharge large volumes of water quickly in emergencies and not waste steam under ordinary conditions. Three steam tight outlet valves are employed instead of one. These valves are placed at the top of the trap as far removed from dirt and sediment as possible. The water enters, filling the trap to the center of the float and forming a seal of from 4 to 6 inches over the lower end of the outlet pipe, thus preventing the escape and waste of steam. When filled sufficiently to raise the float, one valve is opened slightly if there is but little water coming in, but widely in event of a sudden inflow of water. One of the valves is equal to the task of taking care of the water under ordinary conditions, but in the event of the water coming into the trap faster than one valve can discharge it, the water rises, carrying the float with it and opening the second valve sufficiently to discharge the surplus water, or wide open if necessary, and so with the third valve if the volume of water coming in is sufficient to tax the capacity of the three valves. Since the discharge from each of these valves is continuous the flow is greater than with an intermittent trap. The trap is provided with a by-pass which may be used at will, and provision is made for a water gauge with which the operation may be watched. The entire mechanism is accessible without disturbing the piping.



THE WRIGHT EMERGENCY STEAM TRAP.

The Automobile & Cycle Parts Company.—There has been formed in Cleveland the Automobile & Cycle Parts Company, with an authorized capital stock of $5,000,000, who have purchased from the American Bicycle Company the following properties: The saddle factory at Elyria, Ohio, formerly operated by the Garford Mfg. Company; the saddle factory at Westborough, Mass., formerly operated by the Hunt Mfg. Company; the steel stamping factory at Milwaukee, Wis., formerly operated by C. J. Smith & Sons; the steel stamping factory at Chicago, formerly operated by the George L. Thompson Company; the chain factory at Indianapolis, Ind., formerly operated by the Indianapolis Chain & Stamping Company; the Ball Company, at Cleveland, formerly operated by the Cleveland Machine Screw Company; the pedal factory at Cleveland, formerly operated by the White Sewing Machine Company; the sheet steel factory at Chicago, formerly operated by Hart & Cooley. The business of each factory is taken over from January 1, 1901. The officers of the new company are as follows: President, A. L. Garford, Elyria, Ohio; vice-president, M. B. Johnson, Cleveland; treasurer, F. N. Smith, Elyria, Ohio; secretary, F. E. Little, Cleveland. Mr. Johnson was also chosen to act as chairman of the Executive Board. The directors are as follows: A. L. Garford of the Garford Mfg. Company, J. D. Climo of the Cleveland Machine Screw Company, Windsor T. White of the White Sewing Machine Company, M. B. Johnson of the Cleveland law firm of M. B. & H. H. Johnson, E. H. Bourne, cashier of the Union National Bank of Cleveland; J. C. Hill, president of the Savings Deposit Bank of Elyria. The new company will have their headquarters in the American Trust Building, Cleveland.

The Cleveland Molders' Strike.

Announcement was made in Cleveland on Saturday that a conference between the molders and foundrymen, relative to the local strike, would be held at the Colonial Hotel, that city, on Thursday, February 7. It is stated that the Conference Committee will consist of members chosen from the executive boards of the two controlling bodies. The Executive Board of the National Founders' Association, known as the Administrative Council, consists of 18 members, while the Executive Board of the Iron Molders' Union of North America consists of seven members. The number of conferees has not been decided upon, but an equal number will be taken from each body. The principal contention of the foundrymen will be for what is known as the Detroit resolutions, which call for open shops. The reduction of 10 cents per day proposed by the foundrymen seven months ago and the proposition which caused the strike will also enter into the negotiations.

Should the conference result in the ending of the strike, it will see the finish of the most remarkable industrial battle ever waged in the United States. On July 2, 1900, some 596 men and 87 boys, members of the local molders' union, struck in 21 shops because of the withdrawal of the advance of 10 cents per day given them a month before. Since then, it is claimed by the molders that every member has remained loyal to the union, not one returning to work. Out of the total number of strikers at the opening of the fight there was on the roll of the union last Saturday 250 men and about 40 boys drawing strike pay. The balance of them have secured work in disinterested shops, or have left the city. Of the 21 shops in which the strike was inaugurated, two, both of which were not members of the National Founders' Association, have settled the differences; three have never attempted to open their doors and the balance have been employing imported men. The foundrymen claim that at present there are 300 molders at work in the foundries.

Lower Freights on Ore and Coke.

Blast furnace operators in the Mahoning and Shenango valleys have asked for lower freights on ore and coke, and the prospects are their request will be granted. The furnaces recently sent a letter to the railroads asking for lower freights, which read as follows:

In view of the reductions in the price of pig iron that have taken place since the advance in coke and ore rates, we, the several furnace companies operating in the Mahoning and Shenango valleys, desire to urge upon you at the next meeting of your traffic association that the rates that were current before our last advance, which was made at the time pig iron was selling at about $26 a ton, be reduced.

It is the general sense of all the furnaces that the coke rate, which would be under the solicited reduction of $1.10 is entirely too high, and we believe that it should not be over $1 in the valleys.

We understand that this matter is to come up at your next meeting, and we make this request expecting that

it will be granted. Please bring this before your meeting on the lines proposed and also in accordance with the talk that the various members have had with you verbally from time to time. You know the great necessities of our case and we expect the relief we have asked.

The Electric Distribution of Power in Workshops.

An interesting discussion upon the question of electric distribution of power in workshops was held at the joint meeting of the Franklin Institute, Philadelphia, on November 15. The question was opened by Prof. F. B. Crocker of Columbia University, who said, in part:

The use of electric motors in factories, mills and other manufacturing establishments has now become so important that it well deserves the careful attention of electrical and mechanical engineers. This new combination of the electrical and mechanical branches of engineering is not much more than five years old, and yet its introduction and success have been so general that it promises to be adopted almost universally in the next five or ten years.

The electric driving of tools and machines must possess important advantages in order to achieve such rapid and general success in its very short career. The principal points of advantage that it possesses may be summed up under the following heads:

1. *Saving in Power.*—This is generally the first point to be considered, but is by no means the most important, as cost of power in most factories and mills is only 1 to 3 per cent. of the total expenses, the cost of labor being usually many times greater. It is, however, a fact that electric driving usually secures a considerable saving in the consumption of power.

2. *Cost of Buildings.*—Since heavy overhead shafting is not required for electric driving, the buildings may be made much lighter and cheaper in construction than for ordinary mechanical driving.

3. *Cost of Equipment.*—The relative expense of equipping a factory with electric motors or with belting and shafting depends upon circumstances, but would usually be greater for the former. The difference, however, is not very great, and the saving in buildings noted above would generally make up the balance. The depreciation on the electrical plant can easily be made less than that on belting and shafting; lubrication is also less and the attention required is no greater.

4. *Arrangement of Machinery.*—The use of electric motors enables the machinery to be placed in almost any desired position. It is not necessary that they should be parallel or arranged in rows or placed at any particular angle with respect to each other. With belting and shafting, on the other hand, the machinery must be arranged in a very particular manner and very often it has to be placed where the light is poor, and accessibility or other important matters have to be sacrificed.

5. *Clear Head Room.*—The elimination of overhead belting and shafting by the use of motors gives a clear head room, which enables overhead cranes to be used freely, and also avoids the great obstruction to light and air, which is a serious objection to the old fashioned methods.

6. *Cleanliness.*—The dripping of oil from overhead shafting is a constant source of trouble and the dirt thrown out from belting is an even worse enemy to cleanliness. The agitation of dust by belting and shafting keeps it in constant circulation, so that it penetrates everywhere and everything.

7. *Health of Employees.*—On account of advantages in regard to light and air and the reduction of dust and dirt, it is found by actual experience that the health of those who work with electrical driving machinery is improved. In the Government Printing Office in Washington, one of the largest in the world, it was found that the sick list was decreased 20 to 40 per cent. after electric motors were introduced.

8. *Convenience for Detached Buildings.*—The electrical method enables detached buildings to be reached easily and economically, which is not possible with ordinary methods. The buildings, like the machinery within them, can be located for general convenience, and not with special regard to supplying them with power.

9. *Freedom for Growth.*—For similar reasons it is a simple matter to extend a building, or add another in any direction or at any time as desired, whereas with the old method of driving the shafting must be installed originally with the idea of extension, or else it must be replaced later. In fact, the length to which shafting can be run is very limited, and the extending of a building, or the erection of another, may require the installation of an additional steam power plant, which is decided objectionable. The electrical plan enables all the power generation to be effected at one point and wherever it is most convenient, even though some distance away.

10. *Shut Downs Less Frequent and Less Serious.*—An accident in an electrically driven plant usually has a local effect only, simply shutting down one or a few machines, while with belting and shafting the breaking or slipping off of a belt may require the whole or a large portion of the machinery to be stopped, in order to make the repair. In a large establishment a delay of even ten minutes represents a very considerable item in wages, and the interruption of the work is demoralizing. It might be argued that the central plant might break down, but that is just as true of a mechanical installation as of an electrical one.

11. *Speed Control.*—The variation of speed that is possible with electric driving, and the conveniences as well as range of control, are very great advantages with most kinds of machinery. The operator can drive the tool to its limit of capacity, and can on the other hand instantly relieve it of strain, if he finds it necessary. With mechanical driving the means of speed control are far more limited and less convenient than with electric motors. The shifting of the belt on a cone pulley, for example, and the throwing in and out of different sets of gearing is a clumsy operation which a workman is not likely to attempt in order to gain slightly in the efficiency or rapidity of working.

12. *Increase of Output.*—Owing to the many advantages named above, but especially on account of clear head room for overhead crane service, and convenience of speed control, it is found that the output of manufacturing establishments is materially increased in most cases by the use of electric driving. It is often found that this gain actually amounts to 20 or 30 per cent. or even more, with the same floor space, machinery and number of workmen. This is the most important advantage of all, because it secures an increase in income without any increase in investment, labor or expense, except perhaps for material. In many cases the output is raised and at the same time the labor item is reduced.

Samuel M. Vauclain, superintendent of the Baldwin Locomotive Works, gave an instructive account of the experiences which he had made in connection with the introduction of electric driving in the shops of that establishment, from the introduction of the great electrically operated traveling cranes to the finally successful adaptation of independent electric motors to machine tools. Many difficulties were encountered, but in the end all were satisfactorily overcome, and the speaker was now prepared to place on record his cordial indorsement of the modern method, on the score of its many and great advantages over the old style power transmission by lines of shafting, which it is displacing.

The speaker favored belt connections for tools in which there was considerable jar, on account of the elasticity of the method. He pointed out also that machine tools as at present built were not adapted for motors, and in so adapting them he would not alter the structure of the tool so that motor and tool would be one unit, but would provide room so that any motor from the market could be applied as an extra device.

He dwelt at some length upon the important economies in the saving of floor space and in operating expenses which had been realized in the Baldwin works by the introduction of the electric driving system, in

testimony of which he made the statement that "if we should abandon electric driving, our manufactured product would now cost us from 20 per cent. to 25 per cent. more for labor;" and again, "were it not for electric driving, the Baldwin Locomotive Works would have to cover 40 per cent. more floor space than they now do, to maintain their present output."

Mr. Vauclain said, in conclusion, that while the question of the saving in power which the adoption of electric motors permitted was of importance, it was by no means the deciding factor, and that he would put in electric driving systems not only if they saved no power, but even if they required several times the power of a shaft and belting system to operate them.

Gano S. Dunn said: It gives me pleasure to participate in this discussion, because I believe one of the greatest engineering advances that have been made in recent years is in course of accomplishing in the introduction of electrical power into our factories, and that by such introduction so greatly will be altered the cost of many kinds of product that we shall experience a readjustment along economic lines that will have important bearings further than we can see. Already I believe electric power distribution is one of the factors which are enabling American industries to undersell and to give better deliveries than the industries of other countries, and the reasons for this tremendous advantage it indeed behooves us to investigate and to discuss within the widest limits.

A consideration of the question shows that in the largest machine shops and factories the cost of power forms but a small proportion of the cost of the finished product, averaging in fact between 1 and 2 per cent. The argument, therefore, for electric power based on saving one-fifth or even three-fifths of this small item, which would have represented a saving of but a fraction of a per cent. in the cost of the finished product, was not very strong. But those who first introduced electric power on this basis found that they were making other savings than those that had been promised, which might be called indirect savings.

If it is argued the saving of a fraction of a per cent. in the cost of goods from economy in the power item is not of much importance, surely this cannot be said where the savings amount to 20 or 25 per cent. of the whole labor item. Savings of this kind are enormous. They would pay in many cases for the whole electric equipment in a short period, and it is to these that the present electrical activity in factories is owing.

Without speaking further on the general aspects of the question I would dwell upon the methods of obtaining adjustability and controllability of speeds, one of the great advantages accompanying electrical power, and will discuss some of the devices that have so far been used for this purpose.

In order not to occupy too much time I shall refer only to the most important means. Among these are control by armature resistance. This is used in railway practice and for crane service and other similar duty, characterized by intermittent operation and variable torque. It is effective but inefficient, since it really operates by varying the voltage at the terminals of the motor, securing this variation by throttling and thereby wasting the energy of the operating current; but it is so simple and hardy that it is used very generally wherever the object of control is variable speed as distinguished from fixed speed capable of adjustment, these two types of control being embodied in cranes and lathes respectively.

Control by resistance lacks the feature of stability of speed, or that characteristic of shunt wound electric motors operating at constant potential, by virtue of which they maintain practically constant speed without respect to their load. The methods of control by resistance are so generally known that an allusion to them is here sufficient.

Next comes the system of control by field resistance, which operates by affecting the field strength of shunt wound motors, giving increased speed in proportion to the amount the field is weakened. The reason the speed increases instead of decreasing when the field strength is weakened is that an essential condition of operation is that the counter electro-motive force of the motor must at all times be nearly equal to the direct electromotive force of the line. Weakening of the field tends to reduce the counter electro-motive force and compels the motor to increase its speed, to restore by this means the counter electro-motive force of which it was robbed by the lowering of the field strength.

This system is of maximum efficiency, there being no losses except those in the motor itself and the field regulator loss, which is insignificant.

It has the very desirable feature of a practically continuous variation over the whole of its range of speed change, the latter being subdivisible into steps indefinitely fine; but it has the following disadvantages:

With the increase of the motor's speed there is, if the torque demanded remains constant, an exactly proportional increase in the horse-power it is called upon to develop, and yet to meet this increased duty it finds itself possessed of a weaker instead of a stronger field. Should the demand for torque increase, as an accompaniment to the demand for increase of speed, the above condition is aggravated.

The result of these facts is that unless the motor is made very much larger than is required for the actual horse-power demanded by its work, it is subject to internal losses from perturbation of field, to poor regulation and possibility of buckling and to sparking which would prove destructive.

On the assumption of constant torque and capacity limited by commutation, the limits of successful speed control through the agency of the motor's field are at the extremes of a range of about 33 per cent. increase above a minimum speed. This requires a motor of which the capacity calculated at minimum speed would be about 33 1-3 per cent. greater than the house-power demanded at maximum speed, or about 76 per cent. greater than the horse-power demanded at minimum speed. A given motor, of which the normal speed is the minimum desired, must not be called upon at maximum speed for an output greater than its normal capacity multiplied by the ratio of the minimum speed to the maximum. An example will, perhaps, make the matter clearer.

Given a lathe, in which it is required to increase the cutting speed 33 1-3 per cent. without changing the depth of cut or feed. If, at the low cutting speed, the lathe required a motor developing 5.6 horse-power at 850 revolutions per minute, at the high cutting speed the motor would run at 1125 revolutions per minute and would develop 7.5 horse-power, and would have to be of a rating of 10 horse-power at 850 revolutions per minute.

Applying our rule in this case, the ratio of minimum to maximum speed is 1: 1 1-3, which is equal to 75 per cent., and 75 per cent. of 10 horse-power is 7½ horse-power. That there is a considerable increase of first cost attending this system is easily seen.

Control by variation of voltage of the circuit is similar in efficiency and in speed characteristics to control by field regulation just described, and for the same conditions of torque and capacity limits has the enormous advantage of requiring no increase in capacity of the motors.

For obtaining variation of voltage there are a number of methods, among them the connection of two armatures in parallel or in series, or its equivalent, the use of a single armature with two windings and two commutators which may be so connected. With the armatures in series, each receives but half the voltage it receives when in parallel.

The most perfect method of controlling by variation of voltage is the Leonard method, which is embodied in several forms. In the simple Leonard system a motor drives a dynamo which in turn drives the working motor. The variation of the field strength of the dynamo causes its voltage to vary correspondingly, and the speed of the working motor to follow closely these variations. A reversal of voltage reverses also the working motor. If voltage is permitted to remain at a particular value, the speed of the motor will be fixed at a corresponding speed. This method gives beautiful control, so perfect in fact that it is what is used on the battle ships of the United States Navy for operating the

great turrets and aiming the guns in their horizontal movements. It is possessed of a property by which not only is the motor prevented from falling below the particular speed for which the voltage has been set, but is also prevented from remaining above that speed through the influence of momentum or other causes.

The facility of handling, together with this braking effect, has led to the adoption of the Leonard systems for operating roll tables in steel mills and other work of similar character. I have seen an enormous table taken at full speed across a mill and stopped suddenly within ¼ inch of a previously made chalk mark, all so smoothly and with such freedom from shock as to seem wonderful.

But the Leonard system has its drawback in its high first cost, although this is considerably offset by a low cost of maintenance. The simple system described requires, besides the working motor, two additional machines of approximately the same capacity as the working motor, and although Mr. Leonard has developed what is known as the "retard and boost" system, which gives similar results with extra machinery of but half the capacity required in his simple system, the first cost is still comparatively high; all of which has resulted in the relegation of the Leonard system to special duties on large and important tools where flexibility of control is of paramount importance.

The most practical system of controlling speeds through the agency of voltage is the establishment throughout a shop of multiple voltage circuits, which maintain permanently six or more fixed voltages of different value, to any one of which the motor may be connected at will.

A system of six fixed voltages may be distributed by four wires, and gives a sufficient number of speeds for most purposes. Where finer subdivisions are required, they may be obtained by a combination of the armature or field resistance methods with the multiple voltage circuits, speeds between those given by the fixed voltages being secured by introducing various amounts of resistance into the armature circuit or by variations in field strength.

For constant torque service, the multiple voltage system requires no increase in the capacity of the working motor, and lends itself particularly well to machine shop practice, in that not all the tools in a shop require adjustable speed.

In fact, if the lighting of a factory is also taken into consideration, probably but one-half of the total load will be of a character best distributed at a fixed voltage, in which case this part may be served by the outside wires of the four-wire system, and the intermediate wires, which will be considerably smaller in size, need to be led only to the tools where adjustable speed is in demand.

W. H. Tapley: The general and various advantages of the use of electric power in workshops have been so clearly and ably presented to you by the first speaker of the evening, Professor Crocker, that I will confine my remarks to the results we have obtained by the use of electric power transmission in the Government Printing Office during the past five years.

Our electric equipment consists of:

Generators.

One 300-kw. Crocker-Wheeler direct connected to Allis Corliss engine 16 x 30 x 30; speed, 150 revolutions per minute.

One 125-kw. Crocker-Wheeler direct connected to Allis Corliss engine 10 x 19 x 30; speed, 150 revolutions per minute.

One 187-kw. Westinghouse kodak.

612-kw., or a total of 816 electrical horse-power in station.

Motor Equipment.

		Horse-power.
Belted motors	21	167
Direct connected	22	105
Geared motors	145	375
Elevators	8	127
Hoists	4	80
Total		854

Lighting.

Equivalent of 5000 16 candle-power 50-watt lamps, or 335 electrical horse-power.

Heating.

	Amperes.
10 press heads: Starting current	300
Average running current	70

Average demand for power when everything is in use is about 1500 ampères × 120 volts = 180 kw. = 240 electrical horse-power. This fluctuates between 1000 and 2000 ampères, or with a maximum demand of 240 kw. or 320 electrical horse-power, this makes a ratio of electrical horse-power, connected to that called for, of 854 to 320, or 2.67 to 1 for maximum peaks and 3.5 to 1 under average running conditions.

So far it has not been necessary to have more than the 300-kw. generator in service at one time to take care of both lighting and power combined.

Hours in service 1899, 300-kw. generator, 2466.

Hours in service 1899, 125-kw. generator, 5616.

Success of Electric Motors.—The use of electric motors has proved beyond a question of a doubt that they are economical and absolutely reliable under all conditions when properly designed and installed to meet the work required of them. This success is dependent on the fulfillment of all the details, such as a high grade of wiring, which means good insulation with a substantial protection from mechanical injury. The accessories should be of sufficient size to perform their work satisfactorily; 230 and 500 volt starting boxes and controllers of equal horse-power should not be used on 115-volt circuits at the same rating, as the increased ampères required by the lower voltage calls for more copper and larger contact surfaces, and unless this is given careful attention failure will be the result, where it should have been success had these points been taken into consideration.

My experience has been, after an uninterrupted use of circuit breakers for five years on all classes of work connected with our office, that they not only protect the motor, but also the machinery, at the same time keeping down the heavy fluctuations upon the station necessarily resultant from ordinary fuse protection.

Cost of Plant.—Our electric plant, consisting of power house, generators, engines, switchboard complete, including circuit breakers on all feeder circuits, wire in main office and all feeder cables, electric elevators, electric motor equipment, with labor and material used in changing from belt to direct connected electric drive, inclusive of lost product of machinery during alterations, cost $150,000.

Cost of Operation.—The amount of help necessary to operate our power plant has been reduced by two engineers over the old belt drive, when we operated two engines for power and one for a small electric lighting plant. Then we only ran nights during a session of Congress, while at present our electric plant is in continuous service throughout the year.

The year 1894 being the last before the introduction of electric power, a comparative statement of cost of coal and gas for that year and the last fiscal year—*i. e.*, 1899—shows very clearly for itself a few of the benefits of the electric drive.

	Coal.	Gas.	Total.
1894	$18,284.00	$9,527.13	$27,811.13
1899	4,667.15	947.60	5,614.75
Difference	$13,616.85	$8,579.53	$22,196.38

Electric output during 1894 (lighting only), 218,175 kw. hours, as against 644,504 kw. hours in 1899 for both lighting and power. During 1899 the boilers were called upon to heat 1,000,000 cubic feet more space than in 1894. The demand for power has more than doubled since 1894.

These results show, since the introduction of electric power, that the cost of help in power plant has not been increased, but slightly reduced; the coal and gas bills have been reduced a total of $22,196.38, notwithstanding the fact that the electric power plant has been called upon to furnish at least 100 per cent. increase of power for mechanical use in the office over the old steam plant, and the incandescent lamps have been increased from 2000 to 5000 16 candle-power, and the boilers were called upon to heat some 1,000,000 cubic feet more of space than in 1894.

The material increase in growth of the office has been

close to 25 per cent.; this would mean an increased gas bill in 1899 over that of 1894, together with increased coal bill, to safely permit the saving to be increased to a total of $25,000.

Our total outlay for the entire electric equipment, previously mentioned, was $150,000. This shows an earning of 16 2-3 per cent. on investment, minus 6 2-3 per cent. for insurance, taxes and interest, or a clear gain of 10 per cent. on total expenditures from coal and gas bills alone.

This saving directly in coal and gas bills, although considerable, is not the greatest benefit gained from the use of electric power in the Government Printing Office.

Our office has been crowded and overtaxed, all the machinery had to be practically placed in the H street wing, which was the weakest portion of the building, with a resultant congestion of work that caused delay, and owing to the disadvantage of handling it the cost was usually necessarily higher than if it had not been so crowded.

The ability to arrange machinery irrespective of line shaft obtainable under the electric drive made all space equally available and valuable for all classes of work, and not confined to storage as heretofore.

This allowed us to add 40 printing presses, which could not be accommodated in our old pressroom, and, although it did not increase the actual floor area, it did materially increase our working floor space.

The individual electric drive most unquestionably increased the output of our printing presses. The foreman of the pressroom told me that during installation he obtained 15 per cent. more work out of his room for the year than under the old belt drive, and that the coming year he expected to get an increase of 20 per cent., if not more. This is not bad from a man convinced almost against himself, having been opposed to trying electric drive, "as it was impossible to make it work as well as steam."

A conservative estimate will allow 10 per cent. as the increase in production from presses after change to electric drive.

The average earning capacity of our presses was $10 each per diem × 100 presses, $1000; $1000 × 300 days, $300,000; 10 per cent., $30,000, as a figure that can be placed as a sinking fund to pay for the equipment, which, at this rate, should pay for entire electric plant in five years.

During the months of February, March and April, 1898, we made a test of electric plant isolated from the heating and manufacturing, which resulted as follows:

1898.	Electric output, kilowatt hours.	Coal. Tons.	Pounds coal per kilowatt hour.	Cost per kilowatt hour at switchboard.	Total cost of all branches electric plant.
February	59,909	81.6	3.05	$0.0206	$2,426.02
March	69,990	98.3	3.14	0.0203	3,286.66
April	63,663	94.0	3.30	0.022	2,564.00
			This includes heating and manufacturing.		
1899.					
January to December	644,504	2,525.9	8.78	0.0295	32,979.18

As stated in these columns last week, the new shafting works of the Republic Iron & Steel Company, at Youngstown, Ohio, have been started. The main building is 300 x 75 feet, with a leanto 150 x 30 feet. The receiving room and warehouse is 75 x 14 feet and contains two pointing machines. The pickling room is 48 x 48 feet and is fitted up with two pickling vats, 36 x 4 feet by 14 inches, and two wash vats of the same dimensions. All dangerous acid fumes are carried from the pickling room by the natural draft system. The machine shop is in the leanto. The equipment of the entire plant is complete.

The new steel bridge being erected for the Pittsburgh & Lake Erie Railroad across the back river near the plant of the American Steel & Wire Company, at Neville Island, is nearly finished. A span of the bridge was swept away during the flood last November, and some of the false work was recently carried off. Part of the second steel span is in place, the first span having been finished about two weeks ago. The bridge will be ready for traffic in a few weeks.

New Shafts at the Gogebic Ore Mines.

It is a matter of a comparatively short time, it is said, when all the shafts through which iron ore is brought to the surface on the Gogebic iron range will have to be abandoned. This is on account of the shafts having been sunk in the ore body, which caves as the ground is removed from beneath. Pillars of ore are always left to protect the shafts, but this has not proved sufficient, and it has already been necessary to abandon a number of them, and the remainder must go in the course of a few years if the present rate of mining is kept up.

The work of sinking the new shafts, which will thus be made necessary, will be a very expensive piece of business for the mining companies, costing them hundreds of thousands of dollars, and should the shafts at present in use cave unexpectedly, the mining operations on this range would be greatly retarded.

The Oliver Mining Company are already preparing for this expected emergency, and have commenced the sinking of a shaft at the Norrie mine in the foot wall—the wall of solid rock south of the ore body—through which they expect to reach the vein some time during the present year. This new shaft is the largest ever sunk on the Gogebic range. It will have four compartments, and will be supported by steel beams instead of wooden timbers. All the other shafts in the Lake Superior country have wooden timbers with the exception of one on the Vermillion range owned by the same company. This will minimize the danger from fire and prevent accidents caused by rotten timbers. It will require about a dozen similar shafts to provide hoisting facilities for the properties owned by the Oliver Company in Ironwood.

A Large Ore Crusher.—The Gates Iron Works, Chicago, have just completed the largest ore crusher ever made. It weights 80 tons, is 20 feet in hight from the floor to the hopper, and is fully twice as large as the largest ever made heretofore. The crusher will be driven by a 150 horse-power engine, and will crush ore at the rate of 8 tons per minute. The machine goes to the Biwabik Mining Company, Biwabik, Minn.

A dispatch from Gouverneur, N. Y., states that the Caledonia iron mines near that village that have not been worked for eight years are to be reopened immediately, and worked to their full capacity. The ore is of a low grade, and when the price of ore declined in 1893, the mines could not be worked at a profit and were closed. Wells & Westbrook of Ogdensburgh, N. Y., are the owners.

The C. E. Rosenbaum Machinery Company, of Little Rock, Ark., jobbers in machinery and mill supplies, have incorporated with a capital stock of $50,000. The new company are the incorporation of the business formerly carried on under the name and management of Charles E. Rosenbaum, who continues as president. The growth of the business necessitated the change to a stock company.

The Polytechnic at Munich, Bavaria, has been granted the right of bestowing upon its graduates the title of "Doctor of Technical Sciences," in addition to that of "Doctor Engineer," which can be obtained by engineers, architects, &c. The first to assume the new degree was Prince Ludwig of Bavaria, upon whom it was conferred in recognition of his services to agricultural science.

The value of exports from Newport News, Va., in the calendar year 1900, was $33,901,371, or nearly $4,000,000 more than in 1899.

The Iron Age

New York, Thursday, February 7, 1901.

DAVID WILLIAMS COMPANY, - - - - - - PUBLISHERS.
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Architect and Engineer.

In the evolution of the typical modern building the function of the architect is steadily diminishing, as that of the engineer becomes more and more important. Time was when the architect included among the essentials of a sufficient professional qualification a knowledge of everything connected with the construction and appointments of buildings, from turret to foundation stone. Such of his problems as were not comparatively simple had been worked out through centuries so completely that almost any question that could arise might be answered by reference to standard tables in the books. Some knowledge of the strength of materials was needed, but, as the rule, the factor of safety was great enough to allow for errors in such matters within rather wide limits. His chief requirement was an artistic taste, and a familiarity with the tricks of shading and color which made attractive pictures. In the field of art the ready made examples, accumulated since the beginning of written history, gave him every assistance. Conventional adherence to orders and types left him little latitude for the display of originality. Everything he could attempt had been so often and so well done before, and the details were so easily accessible, that to attain to the highest standards in architectural art he did not even need to be an artist, nor anything more than a skillful adapter. Under these circumstances the real function of the architect was very different from that with which he was credited in popular estimation. Having made a set of drawings, more or less skillfully compiled from the always available data of ancient and modern experience, he became a sort of "clerk of the works" to supervise construction and see that the several mechanics in their respective lines performed their contracts to his satisfaction and that of the owner. It is not surprising, therefore, that the profession of architecture, being easily assumed, was invaded by incompetents and empirics, since any man who could make attractive drawings and possess himself of printed specifications and contract blanks felt himself qualified to practice it, and quite at liberty to do so.

What the function of the architect is in connection with such complex constructions as the modern business building it is difficult to say. As an artist, he is hampered by the arbitrary and inflexible limitations of metes and bounds. In the matter of proportions he must do violence to his sense of just relations, since on a very limited area he must pile story upon story to secure the rental space which will be compensatory to the owners. Take, for example, the problem which one of our New York architects has in hand at the moment—a 30-story building, 445 feet high, on a plot of ground 118.5 x 95 feet. Such beauty as inheres in a factory chimney is about all we can expect from such proportions. The architect may decorate the *façades* more or less appropriately, and finish with a cornice more or less elaborate, but that is all. His window requirements deny him the satisfaction of imitating the stately dignity of the Campanile tower, which, if perforated with banks of plate glass windows, would become grotesque. If "Freedom shrieked when Kosciusko fell," Art certainly shrugged her beautiful shoulders and turned away sorrowful when the "sky scraper" became the modern type of urban monumental architecture.

But not alone as an artist is the architect being displaced by the changed requirements of the times. The modern office building is a very complex organization. Its problems are such as demand the highest engineering talent and the ripest experience. What they are and how they are dealt with would seem to show that modern architecture is developing along lines which render the architect *functus officio*.

The problems of the cellar and foundations are usually such as to tax the ingenuity of the civil engineer, to whose faith all things are possible. Often they demand caisson work; frequently they deal with quicksand and water in very troublesome forms. Some of the underground work in Chicago, New York and other large cities has called for really brilliant engineering to secure a dry cellar and foundations capable of carrying the great load of superstructure towering above the weather vanes of neighboring church spires. For this work the civil engineer—not in a consulting capacity, but as responsible designer of and contractor for the excavation and its contents—has in many cases been needed. Then comes the steel frame. Probably not one architect in a thousand understands the principles of steel construction well enough to design the framing of an office building of the modern type. It requires a special knowledge, and for this purpose the architect calls in the engineer or intrusts this part of the work to the engineers employed by concerns engaged in this business, who make his drawings, work out his calculations and take full and responsible charge of construction. Next we have the stone and brick work. As the rule the architect's share in this goes little beyond the design. Again the civil engineer is needed to handle successfully a hundred anxious problems of walls and wall materials. The adequate attachment of the walls to the frame and floors are problems of the most serious import. A writer in the New York *Times* compares the walls of our tall buildings to "sheets of cardboard set on edge." The comparison is a striking one. In all these matters the engineer stands at the architect's elbow, and without him the limits of the practicable in altitude would have been reached long ago. As it is, there seems to be no good reason why 30 stories should present any more difficulties than 20.

In the equipment of the building the problems are of a kind to demand the attention of specialists in several lines of engineering. The elevators are built and installed by those who have brought this branch of business to a high development. Beyond prescribing the number of cars to be provided the architect has nothing to do with the elevators. Any interference on his part with their construction or equipment would be likely to leave him with the whole responsibility on his hands. A mistake in anything connected with the elevator installation would be fatal to the profit of the investment; for which reason the architect rarely has a chance to make it. When he does it is usually in the matter of an inadequate provision of accommodations.

In lighting the architect has to place himself in the hands of the electrical engineer in everything save questions of taste in such minor matters as the pattern of fixtures. If unwilling to do this he makes a grave mistake, for in such case it commonly appears that his wisdom is foolishness. The lighting of a modern office building is not an easy problem. Its electrical installa-

tion assumes the character of a small central station, which has to serve the needs of a population equal to that of a small town, and much more capricious in its consumptive requirements. The lighting load is peculiar and presents many difficulties. It consists of a very light day load and a sudden but short evening demand which jumps the load from very close to zero to as close to maximum within a few minutes. The system is also subject to infrequent but almost instantaneous maximum loads, as when thunder showers are gathering. Provision must be made for the dark and foggy days in winter and for the possibility that "stolen light," taken in at windows above the roofs of adjacent buildings, may at any time be permanently cut off. Satisfactory electric lighting in an office building, with a margin of safety for contingencies and immunity from the fire risk of defective insulation, short circulating, &c., demands the highest skill in planning and installation, which no architect can acquire incidentally.

Plumbing and drainage also present problems which are peculiar to this class of buildings. To handle them successfully the architect needs the co-operation of the sanitary engineer—lacking which he is quite sure to give his building a bad name for insalubrity. The same is true of heating and ventilation. The distribution of steam heat through hundreds of rooms of all sizes and shapes, empty or crowded as may be, is an operation concerning which it may be said that "fools rush in where angels fear to tread." Not only has this subject a literature of its own, but it is commanding the exclusive attention of a number of engineers who are specialists in this line of work and have brought its appliances to a perfection which relieves the architect of any further responsibility than to select a system for which a competent engineer is sponsor. The ventilation of such a building is difficult, for the reason that individual tastes and requirements vary through a wide range and nothing quite automatic or controlled by a thermostat would suit everybody. On this problem, however, very able and conscientious engineers are steadily at work, and every year sees the appliances for temperature regulation and air replacement brought nearer the standard of satisfactorily automatic operation.

From all this it would appear that when we speak of architecture in connection with modern building we mean engineering of the highest class, and in many highly specialized departments of professional work. The function of the architect seems to be shrinking, and he may, ere long, be eliminated altogether by the engineer, who will assume the baton and, when he needs him, employ an artist to design his ornamentation.

Activity in the Chicago Building Trade.

The prognostications of a building boom in Chicago, made some time since, are being verified by official reports. The city permit bureau states that the permits issued for the month of January show that it was the best in building operations that Chicago has seen in seven years, or since 1894. The estimated value of the buildings for which permits were issued was almost double that of the corresponding month in the past three years. As January is one of the most unfavorable months for the prosecution of outdoor work, this unusual activity would seem to definitely assure a year of extraordinary activity in the Chicago building trade. A greatly increased local consumption of iron and steel is therefore to be expected, even if comparatively few office buildings or other large steel frame structures should be undertaken. So much iron and steel work is now used in the erection of buildings of moderate size that a continuous demand for structural material is a feature of even moderate activity in building circles. It is believed that the local labor troubles, which so seriously hampered building operations last year, have been satisfactorily adjusted, and that no interruption of importance is to be apprehended on that account. The bitter experience then suffered should be sufficient for at least two or three years.

Railroad and Industrial Financiering.

It is about time for the astute financial writers, who predicted all sorts of trouble when the great iron and steel consolidations were launched, to "view with alarm" the piling up of great volumes of fresh obligations by railroad companies. The gigantic deals which are now being effected, and over which such demonstrations of enthusiastic approval are being made on the Stock Exchange, are accompanied by announcements of the issue of new bonds or other forms of indebtedness by the railroad companies in whose interest the deals are made. In some conspicuous instances these railroad companies are corporations that have passed through bankruptcy and have been reorganized with great loads of securities to carry in the form of five or six kinds of bonds and two or three classes of stocks. By the practice of the strictest economy, the payment of only partial interest on junior bonds and the withholding of all dividends to stockholders, these roads after a struggle of years are just working into a position promising something of financial ease. Now they take on themselves additional burdens in the hope of being able to increase their earnings. Other roads which have also passed through the reorganizing process, but have enjoyed unexpectedly large traffic since then, enabling them to pay dividends, are also saddling themselves with alliances requiring a large issue of securities and which may or may not be profitable. The watering of stocks, which for a long time had been in disfavor, is again in full swing, and is apparently proceeding at a more rapid rate than ever. Railroad financiers are planning for the future as though prosperity was to be henceforth a fixed condition and railroad traffic would never be found running under the volume enjoyed for the past two or three years. But the lean years are sure to come, and when they do come they will have a most serious effect on the railroad systems now being overloaded with securities. Surely this is a far worse development from a business point of view than were the iron and steel consolidations launched with little or no bonded debt and therefore having merely the welfare of their stockholders to consider. Those consolidations held out no financial menace as do these railroad deals. If the next period of severe business depression is passed without some serious failures of railroad companies the country will indeed be fortunate. Past depressions have been intensified by occurrences of this character.

The growth alike of New York City and of its business in the year 1900 is aptly illustrated in the annual report of the Postmaster of New York. The report shows that more business was done last year than in any other 12 months in the history of the New York Post Office. The gross receipts for 1900 were $9,869,458; the receipts for 1899 were $9,126,051. The increase is $743,506, or 8 per cent. The gross receipts for December alone were $895,057. This is an increase of $73,206 above those of the same month in 1899.

CORRESPONDENCE.

The Flexible Shaft of the De Laval Steam Turbine.

To the Editor: In a paper read before the Engineers' Society of Western Pennsylvania, and published in your issue of December 27, 1900, Mr. Hodgkinson, speaking of the bearings and rigid shaft of the Parsons steam turbine as compared with the slender flexible shaft of the De Laval steam turbine, does this in a way that may possibly convey the idea to the minds of your readers that the De Laval flexible shaft is liable to crystallization and eventual rupture. Judging from the thorough knowledge Mr. Hodgkinson seems to have of the De Laval steam turbine, this cannot have been intentional. The object of the De Laval flexible shaft is to allow the turbine wheel to revolve around its true center of gravity, thereby decreasing the pressure and friction in the bearings, and also eliminating all vibrations. This, in fact, it does, as there is not a single record of the shafts having ever been broken on account of crystallization.

At the Paris Exhibition a De Laval turbine was exhibited which had been in daily operation for seven years, during that time completing about 20,000,000,000 revolutions, and without any of its original parts having been replaced. The writer knows of one instance where a flexible shaft and turbine wheel, having run about the same length of time as the above machine, were cut into testing pieces and tested, and the material was found to be practically unchanged.

E. MEDEN.

PHILADELPHIA, January 31, 1901.

The Kernohan Steel Process.

To the Editor: I have read with great interest the article in *The Iron Age* of January 31 on "The Kernohan Steel Process." Although the comparison at the end of the article includes the two processes described at the May meeting of the Iron and Steel Institute—that is, the Talbot and the Monell processes—it seems to me that in order to complete it the Bertrand-Thiel process should have been included also. The latest developments in this process were described by me in a paper read at the Washington meeting of the American Institute of Mining Engineers, which was published in *The Iron Age* for March 22, 1900.

During the past year the process has been in continual use at Kladno. The average production has been 48 heats per week, and the average gain has been over 2 per cent. (in total product).

On the basis of this work, a product of 6500 tons per week by the Bertrand-Thiel process would require 18 furnaces of 15 tons capacity, 14 furnaces of 20 tons capacity, eight furnaces of 30 tons capacity and six furnaces of 40 tons capacity. In order to show the results at a glance, I have arranged Mr. Kernohan's comparisons in a table, adding thereto the Bertrand-Thiel process and also an estimate of the furnace cost in each case. The practice in the Talbot process at the present time, as I am informed, requires the number of furnaces for a production of 6500 tons per week to be reduced from 12 to 9. The cost of furnaces includes only the furnace, the valves and the stack. These estimates will, I think, be found conservative.

Comparative Table of the Kernohan, Talbot, Monell and Bertrand-Thiel Processes.—Weekly Production of 6500 Tons.

Process.	Number of furnaces necessary.	Capacity of each furnace.	Loss.	Gain.	Cost of each furnace.	Cost of furnace plant.
		Tons.	Per cent.	Per cent.		
Kernohan*	4	40	9	..	$30,000	$120,000
Talbot	9	75	..	6	47,000	423,000
Talbot	4	200	..	6	80,000	320,000
Monell	10	40	..	2	30,000	300,000
Bertrand	18	15	..	2	10,000	180,000
Bertrand	14	20	..	2	15,000	210,000
Bertrand	8	30	..	2	24,000	192,000
Bertrand	6	40	..	2	30,000	180,000

*Cost of reducer and plant to be added.

With a production of 6500 tons per week and a 9 per cent. loss, the Kernohan process will give a weekly loss of 643 tons. At an average price of $14 per ton for stock, this would mean an added cost of $9000 per week for this process. To this must be added the cost of running the reducer and its accessories.

I think that the above statement and table will facilitate the decision as to the most economical process, both as regards first cost of plant and cost of operating. Possibly some such consideration as this has aided Bolckow, Vaughan & Co. in their decision, since, as I am informed, they have recently decided to adopt the Bertrand-Thiel process. JOSEPH HARTSHORNE.

STOWE, PA., February 4, 1901.

Cast Iron Wheels for Heavy Coal Cars.

Present experience with coal and ore cars of large capacity seems to indicate that the limit of the cast iron wheel has been reached, unless a change in form is made or the wheel flanges are in some way relieved in service. The breakage of wheels, and particularly of flanges, under 50-ton cars has created a great deal of anxiety of late, and the question of the necessity of steel tired wheels for this service is now seriously raised. It has been said that the cars are too heavy and that there will be a general reduction from 50 tons to 40 tons as the maximum capacity. This probably will not be done as long as railroad managements are able to obtain the benefits of 50-ton loads in one or both directions in cars making an average of 2000 to 2600 total miles per month, which is now being done. There seems to be no question of the firm establishment of the 50-ton car, and the wheels must be made to carry them. Cast iron wheels for these cars have been strengthened at the hub to the point of withstanding a wheel press pressure of 110 tons upon a mandrel, and they have, in at least one case, been increased in weight to 690 pounds for the purpose of overcoming breakages in the plates, but the breakage of flanges is not so easy to stop. The opinion that the limit of strength of the flanges of cast iron wheels of the present standard contour has been reached is growing among those having the widest experience with these cars. It seems to be necessary to increase the thickness of the flange as it stood before 1894 or to take up the steel tired wheel. Perhaps ⅛ inch more metal in the thickness of the flange will be enough. It is, of course, desirable on account of the low cost to make the cast iron wheel strong enough, and efforts will be made in that direction. This question will undoubtedly receive attention at the convention next summer, but instead of being confined to engine trucks, the relative safety of the two types of wheels needs to be considered also from the standpoint of cars. Several broken flanges coming to our notice had blue fractures showing the influence of the brakes on mountain grades. This is troublesome in the East as well as in the West. It is evident that the near approach to 75 tons of car and load brings up new factors in the matter of wheels. It occurs to us that perhaps the general use of rigid trucks has a bearing upon the flange breakage, and the suggestion of a return to the swing motion truck for such heavy cars seems to be a reasonable one. It would undoubtedly serve to reduce the shocks to which rigid trucks must necessarily subject the wheel flanges.—*American Engineer and Railroad Journal.*

The completed returns of fire losses in the United States and Canada during the year 1900, as compiled by the New York *Journal of Commerce*, show a total loss of $163,362,250, as compared with $136,773,200 in 1899, which was regarded as a year of heavy losses, and $119,650,500 in 1898. The past year was a disastrous one for the fire underwriters, an unusually large number of conflagrations having marked its course.

It is stated that the White Star Steamship Company have contracted with Harland & Wolff of Belfast, Ireland, for a 20,000-ton steamship, to be employed on their transatlantic service. This vessel will be 3000 tons larger than the company's "Oceanic" and will exceed in size the "Kaiser Wilhelm II," now being built at the Vulcan Works at Stettin.

The Brown Wire Wound Gun.

WASHINGTON, D. C., February 5, 1901.—The contract entered into between the Government and the Brown Segmental Tube Gun Company during the incumbency of Secretary Alger for 50 wire wound guns of 5 and 6 inch caliber has been canceled by the Chief of Ordnance. The contractors have protested against this action, and their interests are in the hands of a prominent firm of New York attorneys. The history of the contract is an interesting one, and has an important bearing upon Departmental regulations governing contractors. It is told briefly by the official records of the Department, which cover a period of nearly three years. The earliest document of the case is the following recommendation signed by General Miles and addressed to the Secretary of War:

"I earnestly recommend that 200 rapid fire guns be purchased, or constructed, of the Brown segmental tube wire guns, 5 and 6 inch caliber, the same that was tried and stood the unusual, extraordinary and remarkable tests to which it was subjected.

"I understand that these guns can be delivered, the first not later than 90 days from the date of the contract, and at the rate of 12 per month after that time, and possibly they can be delivered with even greater rapidity. This same firm can furnish 12-inch mortars of the same type very rapidly, and at less cost than the mortars now in use."

Upon the above letter Secretary Alger wrote the following indorsement: "Contract for 50 guns now with condition that we can increase the order within 60 days if desired."

Gen. D. W. Flagler, then Chief of Ordnance, was not convinced of the desirability of purchasing the guns referred to in view of a test that had been made, and he therefore addressed the following communication to the Secretary of War:

"I have been verbally informed by the Major-General Commanding the Army that you had approved of his recommendation as follows. . . .

"To procure 50 rapid fire guns, 25 of 5-inch and 25 of 6-inch caliber, of the Brown segmental tube wire wound pattern. A 6-inch gun of this type has been tried by the Department with the result that it failed under test. One hundred and ninety-two rounds were fired, of which 29 were with pressures between 40,000 and 50,000 pounds per square inch, 11 between 50,000 and 60,000 pounds, three between 60,000 and 70,000 pounds and one of 82,850 pounds. The last round was with 36 pounds of brown prismatic powder, the recorded pressure with the two gauges used being 50,956 pounds and 48,450 pounds per square inch. The designed pressure was 40,000 pounds for ordinary service and 50,000 for battering charges. The failure of the gun consisted of a rupture of the lining tubes in two places, each crack being about 12 inches long and ¼ inch wide, the breaking in two of one of the staves and the blowing of a hole through the wire envelope. The high pressures recorded are no greater than service guns have frequently endured without injury; this gun did not endure them, but gave way, as shows by the result, after 192 rounds. A gun of 6-inch caliber should have endured five times as many.

"The theory of construction of the Brown gun requires the production of material of qualities not yet attained commercially, and the economical and expeditious manufacture requires nicety and exactness never even attempted in the processes proposed to be used. These facts should preclude the purchase of any number of these guns even if one had been built and had not failed under test."

Ten days later General Flagler's letter was returned with the following indorsement:

"Respectfully referred to the Chief of Ordnance, U. S. A., with instructions to accept the within modified bid, and to procure under contract 25 5-inch and 25 6-inch rapid fire guns, on the Brown segmental wire system, and their mounts, at the cost and at the times of delivery stated within, and to inform the contractors that the contracts will provide for increasing the number within 60 days if the Department so desires."

The modification of the bid referred to related to the reduction of the number of guns from 200 to 50. This modification was referred to in the following telegram addressed to the Secretary of War by Brown & Munsell, trustees of the Brown Segmental Wire Gun Company:

"Mailed you price for 50 guns and mounts 9th inst. If you can see your way clear to give us order for 500, equal proportions of 5 and 6 inch, with mounts complete, and we get duplicate order from navy for 500 more, 1000 all told, then America could well afford to say she was far and away ahead of all countries on earth with unburstable 5 and 6 inch rapid fire guns, both land and sea. The Brown segmental tube wire gun has been tested as no other gun on earth was ever tested, and not found wanting. Now is time to strike while the iron is hot, General, for the best rapid fire guns and mounts. We can and will furnish them in double quick time, and giving the order try and squeeze it up to 500. You will need them all before the impending skirmish is over, and the country will need them anyway, war or no war."

Under same date Brown & Munsell forwarded a supplemental telegram as follows:

"I omitted to say in my telegram just sent that there are three lengths of rapid fire guns in the navy—30, 35 and 40 calibers—40 the longest. We propose to go 5 calibers better, making all our rapid fire guns 45 calibers long. Nobody will attempt to beat that. With 45 calibers long and good smokeless powder we can simply make projectiles rain in the camp of the enemy at long distance, with muzzle velocities all the way from 2750 to upward of 3000 feet per second muzzle velocity, without hurting gun. Our 5-inch Brown segmental tube wire gun now holds the world's record for muzzle velocities at 3235 feet per second, and that is reason why no other gun on earth can compete with us. We hold the field for great endurance, able to withstand enormous pressure without harm and world's record on velocities."

In order to keep General Miles informed of progress made H. M. Munsell, under the same date as that of the two dispatches above quoted, sent the following telegram to the Commanding General:

"The Secretary of War was so particular we should 'address the Secretary of War' about order for guns, we mailed him a written bid, naming price, &c., as of the 9th inst., mailing a typewritten copy at the same time to you, which I hope you received this morning.

"I have just sent the General a telegram, to help matters along a little, of which the following is a copy. I do this in order to keep you fully posted in regard to the matter in all its various stages up to date, because you set the ball rolling with the Secretary of War, and we are only pushing it along so it will not get stranded while we wait.

"You asked for 200 and got 50 approved. I have asked for 500 in order to try and land the 50, and we will do it, I think, if our letters and telegrams do not fall into the camp of the donothings, who are always mad if any one else tries to do something, but just you wait and see the fun later, for it is bound to come."

A contract for the 50 guns was made under date of May 18, 1898, the first gun and mount to be delivered in three months and four guns and mounts per month thereafter. In a memorandum recently made by the officials of the Ordnance Bureau, it is stated that "it was believed in this office at the time of executing the contract, which belief has since been substantiated, that these trustees were not prepared with either drawings or plant to execute the work in accordance with the contract; as regards time of delivery, it is only necessary to state that up to the present date but one 5-inch gun and mount have been delivered; that repeated extensions of the contract have been necessary and that practically no work has been done on the 6-inch guns and mounts." The memorandum continues with a description of the effect of the firing of the test gun in which it is said: "Suffice it to say with reference to this gun that at the 192d round, which was with a charge of 36 pounds of brown prismatic powder, giving recorded pressures of 50,956 pounds and 48,500 pounds in the two gauges used, two large cracks were discovered in the lining tube. . . . The gun being rendered unserviceable the test was suspended and permission was given the company to remove it for dismantling and inspection

by the board, &c." As the result of these tests the design was discarded and a modified plan adopted in which wedge shape segments were replaced by curved segments. As to the test of the new gun the bureau says:

"The type 5-inch gun has been fired 300 rounds, with moderate pressures, averaging not much over 31,000 pounds, except five rounds, which were fired with pressures between 40,000 and 50,000 pounds, the latter pertaining to the last rounds fired. The prescribed muzzle velocity has been attained, and while it may be considered that the contract requirements have been met, yet with so little reserve of strength and rigidity of construction that granting the guns may be serviceable for a fire of 300 rounds with moderate pressures, they are of doubtful endurance for service guns. The contractors propose to give more rigidity to the construction by thickening the walls of the tube, and they have already made certain improvements in the breech mechanism to obviate the defect developed in the firing test. The mount, which is of the navy type, is also believed to be of doubtful strength, and the attention of the trustees has been repeatedly called to this point, and certain modifications were made by them with a view to increasing its resistance. They have thus far under manufacture only five mounts of this particular type, and profess their willingness to adopt a different carriage for the remainder of a type to be approved by the Department.

"In view of all the facts, while it may be held that the terms of the contract have been met, yet it is recommended that 100 additional rounds be fired from the type 5-inch gun at the expense of the Department, using pressures conforming more nearly to the pressures that will be incurred in service, in order to fully test the system and to give the manufacturers any further information that may be thereby developed, to enable them to suitably modify the remaining guns to be delivered, such modifications to be made without additional expenses to the Department, the acceptance of the guns to remain in abeyance until after this additional test has been made."

Since the above memorandum was prepared very little progress has been made, and in his last annual report to the Secretary of War the Chief of the Bureau of Ordnance said:

"On these guns the Department has depended to meet the requirements for 5 and 6 inch guns for the coast fortifications, the armament of which has been greatly delayed, causing serious detriment to the public service. There is little prospect of the early completion and acceptance of these guns, and I deem it expedient at this time to invite your attention to the history and present status of the contract for them."

In view of the facts above set forth the Chief of the Ordnance Bureau, acting presumably with the consent of the Secretary of War, has canceled the contract. The contractors claim, however, that they are not altogether to blame for the delays that have occurred, and further that the wire wound gun constructed by them has been a practical success. The Department is not advised as to the steps that are proposed to be taken to enforce the contract, but thus far has declined to concede that any question for discussion between the Secretary of War and the attorneys for the company has been raised.

W. L. C.

Union Boiler Tube Cleaners.—The Gem Mfg. Company, Second avenue and Wood street, Pittsburgh, have secured control of the entire business of the Union Boiler Tube Cleaner Company, at Pittsburgh, and in the future will manufacture and supply to the trade Union boiler tube cleaners. The Gem Mfg. Company have received an order from the Anaconda Mining Company, Anaconda, Mont., for a large lot of miners' supply oilers. These are made out of 22-gauge steel, and possibly 20-gauge. The Anaconda Mining Company formerly bought these made up of bright tin, but the miners carrying them in their pockets knocked them against posts and other obstructions, and damaged them easily. It is proposed by the Gem Mfg. Company to supply these from No. 22 steel, making them rigid and able to withstand severe shocks. The Gem Mfg. Company are having a large demand for their Gem Oilers, which they also make of 22-gauge steel, making them very strong.

The Ship Subsidy Bill.

WASHINGTON, D. C., February 5, 1901.—After a week, during which Senator Frye has made good his declaration not to lay aside the subsidy bill in favor of an appropriation bill, the Senate is now no nearer a vote than at that time. Six days have been devoted to arguments by the minority in opposition to the bill and such desultory debate as has been provoked by these attacks on the measure. The futility of attempting to maintain this programme is now generally conceded and hereafter the appropriation bills will be given the right of way, the managers of the shipping bill contenting themselves with calling it up in the intervals between the supply bills.

A week ago there was reason to believe that by keeping the shipping bill continuously before the Senate and holding a seven hours' session daily the set speeches of the minority would be speedily exhausted and a vote might thus be secured through concessions regarding other measures, and also because of the reluctance of the minority to enter upon undeniable filibustering tactics. This expectation has been disappointed. So great has been the pressure of current business that the minority Senators have had no difficulty in occupying the unemployed time of a day's session in the delivery of a single speech, and the statement is now made that no less than eight set speeches are now held in reserve, each of which will occupy from one to two days. The daily sessions have been lengthened by meeting at 11 and sitting until 6 o'clock, instead of from noon until 5 o'clock, as heretofore, but this has availed little. Threats of night sessions have had no terrors for the minority, for the reason that the managers of the subsidy bill have experienced no little difficulty in securing the continued attendance of a quorum during the day sittings. It is conceded that it will be next to impossible to maintain a quorum of Republican Senators and the tactics of the opposition would therefore be very simple, involving the absenting of all but two or three of the opponents of the bill, who would attend for the purpose of speaking continuously and to demand the presence of a quorum whenever the attendance dwindled below that number.

Under these conditions the Republican leaders, aside from those specially interested in the subsidy bill, have decided that it would not be wise to sidetrack the appropriation bills any longer, and they will therefore be taken up as rapidly as they are reported. They will be freely discussed by the minority up to the point of apparent filibustering, and it is therefore easy to see that the fate of the shipping bill is now in the hands of the Democratic Senators. If, as some of them profess, they regard the bill as a dangerous measure, the passage of which will react strongly against the Republican party, they may permit it to come to a vote; otherwise the task of defeating it is comparatively easy.

An interesting feature of the debate during the week has been the effort made by the minority to demonstrate that ships, especially with steel hulls, can be built in the United States as cheaply as in Great Britain. Senator Turley, who made the principal set speech of the week on behalf of the minority, undertook to prove out of the reports of the Commissioner of Navigation that steel construction was actually cheaper here than abroad. In this connection he said:

"Can we build ships now in competition with Great Britain? The Commissioner of Navigation, one of the advocates of this bill, in his official report—a report, by the way, which is very much devoted to the passage of the pending measure—is compelled to admit that, to quote his own words:

"'When we can build as cheaply as Great Britain there is no reason why the United States should not share that country's profitable trade in supplying foreign flags with medium sized cargo steamships, a trade which last year amounted to 138 steamships of 294,559 gross tons.'

"He concludes that we cannot yet do this. Is this conclusion well founded? On page 31 of his official report the Commissioner gives the prices of steel ship

plates in England and the United States in 1899 and 1900 as follows:

Prices of Steel Ship Plates.

1899.

	April	May.	June.	July.	August.	September.	October.	November.	December.
United States:	$50.40	$50.40	$50.40	$56.00	$56.00	$67.20	$67.20	$67.20	$67.20
Great Britain:	34.63	34.63	35.84	36.45	37.06	37.06	37.06	38.88	38.88

1900.

	January.	February.	March.	April.	May.	June.	July.	August.	September.
United States:	$58.24	$50.40	$48.18	$42.56	$40.32	$33.60	$28.00	$24.08	$24.64
Great Britain:	38.88	39.49	40.10	40.70	40.70	40.70	40.86	38.88	38.88

"The Commissioner follows these tables, on the same page, with this statement:

"'In 1894 the plates of the "Dirigo," the first steel square rigged ship built in the United States, were imported from Great Britain. In 1898 we exported to Great Britain some of the plates for the British steamship "Oceanic," the largest vessel afloat. During the past summer American steel ship plates have been quoted in British markets, though ocean freights have been $5 and in some instances more. Special causes have, of course, been at work in both countries to produce the marked fluctuations in the prices of steel ship plates, but it is doubtless within bounds to assert that for the future, under normal conditions, the price of steel ship plates in the United States will usually be lower than in Great Britain. Our output of plates, of course, is thus far much smaller than the British, but every foreign purchase of American ship plates is indirectly a small contribution to the remote future of American shipping.'

"A recent issue of a prominent German paper is quoted as saying:

"'It is known that the American iron works eclipse those of all other countries, whether in the magnificence of their establishments or the methods of saving hand labor by technical devices or in facilities for reducing the cost of production through the wholesale scale of their manufactures.'

"And this journal admits that the break in the iron prices in Germany was caused by American imports.

"I have seen a newspaper statement within the last few days in a Philadelphia paper, I think, that recently Glasgow builders had contracted for 150,000 tons of ship plates in this country at a saving of $125,000, and this fact was mentioned a few days since in debate here by the Senator from Massachusetts, Mr. Lodge.

"'There are now invested in shipyards in the United States $50,000,000 to $55,000,000 of capital and 38,000 men are employed in them,' as reported by the honorable Commissioner of Navigation, and they are now building 68 merchant steam vessels, aggregating 277,680 gross tons, and 47 naval vessels, of 113,329 tons; and he adds that since this estimate was made two steel cargo steamships of 9760 gross tons and 12 knots average speed are being built by the Maryland Steel Company. If materials are now cheaper here than in Great Britain the question of cheap construction becomes at once important."

In the effort to make a similar point Senator Mallory read the following extract from the Glasgow correspondent of *The Iron Age:*

"While it is true that the Clyde's characteristic industry has hitherto imported some American pig iron from the South for its shipbuilding, it has made quite generous use of American steel ship plates in self defense against the Scotch steel plate makers.

"The effect has been, so the Scotch plate makers declare, to bring down local prices to a wholly unremunerative level at present prices of fuel and crude iron. The nominal price of Scotch ship plates early in November was £8 per ton, net £7 12s., while the Clyde shipbuilders were quite generally working on American steel ship plates delivered at ship at £7 per ton, and even below that figure. In other words, the low price steel plates from the United States have actually saved the Scotch shipbuilders on the Clyde from the necessity of shutting down on account of the high prices demanded by local plate makers."

In commenting upon this extract and a number of statements taken from other publications, Mr. Mallory asked in what respect the pending measure would contribute to the prosperity of the shipyards of the country. Opportunity did not serve for a reply by the friends of the measure either to Senator Turley or Senator Mallory, but some interesting figures have been compiled showing the other side of the question, which will be submitted later on.

During the week the amendments which the managers of the bill decided a fortnight ago to accept were presented in the Senate by Senators Aldrich and Burrows, and were printed for convenient reference. They embrace a reduction in the contract term from 20 to 15 years, the fixing of 18 knots as the maximum speed basis for the calculation of compensation and the exclusion of tank steamers from the benefits of the act. All these amendments will doubtless be adopted if votes can be had thereon. They will materially strengthen the measure among the Republican Senators, but it is doubtful if they will gain any votes among the minority. The managers of the bill continue to predict the early collapse of the opposition, but they furnish no details as to how it will be brought about. W. L. C.

The Carnegie Negotiations.

There is a very tangible basis for the rumors which have been current during the past few days and which point to the probable success of the negotiations looking to the purchase of the interest of Andrew Carnegie in the Carnegie Steel Company by a syndicate of which J. P. Morgan is the head. We may state, on the highest authority, that, contrary to the reports, the affair has not yet been actually closed. All that can be said at this juncture is that the negotiations have progresed to a point where the probabilities are that they will be carried to an issue. There is, however, still the possibility that Mr. Carnegie and Mr. Morgan may not agree finally upon the terms.

It is understood that Mr. Carnegie, if present plans are carried through, will withdraw entirely from the active management, receiving in payment for his stock interest a very large sum in 5 per cent. bonds, which are to be a first lien on the Carnegie and other properties. If the negotiations fail, it is likely that Mr. Carnegie will continue an aggressive policy.

While many in the trade have expressed the doubt whether Mr. Carnegie would be willing to surrender the position of the recognized leader in the steel trade in the world, it is true, on the other hand, that he is known to be eager to devote his abundant energy to his philanthropic plans, for which the income from his holdings of bonds would afford to him the most abundant means.

What interests Mr. Morgan represents is not definitely known. Mr. Morgan's firm are known to have been closely identified with the Federal Steel Company and have been instrumental in floating also the National Tube Company and the American Bridge Company. The position of the National Tube Company was seriously threatened by the Carnegie plan to build a tube mill at Conneaut on the Lake Shore. The Moore interests may be willing to make sacrifices for the sake of harmony, to protect two of their allied concerns.

While the extent to which an actual consolidation will take place and whom it is to include are not revealed, there is internal evidence that at least the Federal and Carnegie companies will be drawn together and that a "community of interest" will be established with the National Tube Company and the Moore group, headed by the National Steel Company. There is no evidence in proof of the statement that either the American Steel & Wire Company or the Tennessee Coal, Iron & Railroad Company will have any direct connection with the proposed consolidation.

Persons in the trade now remember that at the time of the former Frick-Moore negotiations to acquire Mr. Carnegie's interest the latter is credited with having stated that a much higher price would have to be paid by those who next negotiated with him. It is under-

stood that the basis now bears out that prediction. It is reported, too, that Mr. Carnegie has taken measures to thoroughly safeguard the interests of his younger partners.

A question which is puzzling the trade is how the new great consolidation is to be floated and whether the public is likely to take it. That, of course, will depend upon the terms made. Mr. Carnegie is known to be adverse to any basis which does not secure his interest through first mortgage bonds. That would not require any fresh money, but there would have to be added to the sum thus constituting a first mortgage lien the minority holdings of the present Carnegie bonds and the underlying bonds of such other consolidations which might be taken in. For the added fixed charges thus obtaining priority on earnings the junior securities must be given some equivalent, which would point to further inflation.

The fact is recognized in the trade that harmony among the great concerns will mean much in permitting of steadier markets, and that a fusion like the Carnegie-Federal Company will wield an enormous power, which may be exerted in the direction of eliminating much irregularity.

If the great consolidation is carried through a new element of far reaching influence will be introduced into the steel trade, which will directly and indirectly affect many interests.

MANUFACTURING.

Iron and Steel.

Fast progress is being made on the new sheet mill plant now being built by the Laughlin Nail Company at Martin's Ferry, Ohio. The concern expect to be in the market with sheets inside of 90 days.

The Sharon Steel Hoop Company, now building a plant at South Sharon, Pa., to make hoops, bands and cotton ties, have decided to add two more mills to their plant and are asking bids for the erection of an 8-inch and a 12-inch mill. The plant when completed will consist of two 8-inch mills, one 9-inch mill and a 12-inch mill.

The Petroleum Iron Works Company, at Washington, Pa., have received contracts for the building of two very large oil tanks, to hold 35,000 barrels each, for shipment to the new oil fields in Southeastern Texas.

The Youngstown Iron, Sheet & Tube Company have given out some contracts for the machine and blacksmith shops of the new plant of that concern. The contracts also include lathes, planers, drill presses, pipe cutters, steam hammers, helve hammers, &c. The contracts were divided among the following firms: U. Baird Machinery Company, Pittsburgh; Manning, Maxwell & Moore, New York and Pittsburgh; American Machine Company, Cincinnati, Ohio; Carlisle & Hammon, Cleveland, and Marshall & Huschart, Cleveland. A site for the new plant of this concern will probably be selected this week and it will be somewhere in the Youngstown district.

The wage dispute between the La Belle Iron Works, at Wheeling, and their puddlers, which was referred to an arbitration committee, has been settled in favor of the company. The men are now being paid by the gross ton instead of the net ton, which was the contention made by the firm.

The Wilkes Rolling Mill Company, Sharon, Pa., now operating a two-mill sheet plant, will add another mill.

The Republic Works of the National Tube Company, on the South Side, Pittsburgh, have been closed.

The Buffalo Union Furnace Company, Buffalo, N. Y., manufacturers of pig iron, were formed by the consolidation of the Buffalo Furnace Company, the Union Iron Works and the Buffalo Charcoal Iron Company. The capacity of the three furnaces is about 450 tons of coke and 100 tons of charcoal iron per day.

The Norton Iron Works, Ashland, Ky., manufacturers of steel cut nails, boat spikes, &c., and dealers in wire nails, wire, &c., are contemplating adding a plant for drawing wire and making wire nails. It is understood that the improvements will cost about $40,000 and will be paid for out of the surplus earnings of the last six months. In order to do this the usual semi-annual dividend was passed at the quarterly meeting held in the latter part of January, but the statement submitted was highly gratifying.

The Dillon-Griswold Wire Company are installing a 2400 horse-power engine in their wire rod mill at Sterling, Ill.

The Minerva Pig Iron Company, Milwaukee, Wis., started their blast furnace on Tuesday, January 29, after a shut down of several months. R. D. Hendricksen has been engaged as chemist.

A site has been selected for the new rolling mill which is to be erected at Terre Haute, Ind. The tract contains 20 acres and lies along the tracks of the Vandalia Railroad. Contracts for the machinery are being let and the mill, which will be completed about July, will give employment to 300 men or more. Producer gas is to be used in the works.

January, 1901, has been a banner month for the Monongahela Steel Works, Blooming and Converting Mills, National Rolling Mills and Boston Rolling Mill of the National Tube Company, having broken all previous records for tonnage in all of the above plants. November of last year was a record month, exceeding all previous tonnage in the history of the plant, but January of this year ran far ahead of this in all departments.

The Titusville Forge Company, Titusville, Pa., have just built a new engine room and enlarged their machine shop. Increase of business has necessitated the installment of a larger engine and adding of several new tools to the machine shop, including two lathes, a slab milling machine and cold saw. A considerably increased business was done during 1900, while at the present time the works are fully engaged. An unusual amount of boat work is in hand.

The Babbitt-Richards Company, Clayville, N. Y., have incorporated with a capital stock of $10,000. The company purpose to manufacture wire and the directors are John L. Babbitt of Whitesboro, Fred. T. Richards and Benj. T. Babbitt of Clayville.

The employees at the blast furnace of the Stewart Iron Company, at Sharon, Pa., have refused to accept the compromise wage scale adopted at other Valley furnaces. The men are still at work at the old rate of wages and have been given ten days to decide whether they will accept. In case they persist in their refusal their places will be filled by other men.

The Crucible Steel Company of America have awarded a contract to Mackintosh, Hemphill & Co. of Pittsburgh for a 40-inch blooming mill and engine for the new open hearth steel plant of the St. Clair Steel Company, which is to be built on Neville Island, under the direction of the Garrett-Cromwell Engineering Company of Cleveland. The engine will be 55 x 60 inches, direct connected.

Ashland Furnace No. 2, Ashland, Ky., was blown in on the 21st ult.

The Lobdell Car Wheel Company, Wilmington, Del., expect to blow out their White Rock Furnace the current week.

The Stanhope Furnace of the Musconetcong Iron Works, Stanhope, N. J., was started on January 24.

The Muirkirk Furnace, at Muirkirk, Md., was blown out January 26 for the purpose of putting in a new hearth.

The Wheatland Rolling Mill, at Wheatland, Pa., which was started up by James A. Campbell, trustee for the creditors, has been closed down again. It was found the mill could not be operated at a profit until material changes were made in the equipment.

The Ohio Works of the National Steel Company, at Youngstown, Ohio, started up on rails exclusively Sunday night, February 3. It is said this plant has orders for 125,000 tons of rails.

The McClintic-Marshall Construction Company of Pittsburgh have a contract for the new tin mill building to contain the additional ten mills of the Sharon Tin Plate Company, at Sharon, Pa. The McClintic-Marshall Construction Company built the other tin mill building, containing the first ten mills.

Between May 1, 1899, and July 1, 1900, the Republic Iron & Steel Company paid in wages to their employees at Youngstown, Ohio, $2,469,342.95. The period covers the 14 months following the organization of the Republic Iron & Steel Company and the purchase of the Brown Bonnell, Haselton and Valley mills.

Claire and Alice furnaces of Pickands, Mather & Co., at Sharpsville, Pa., will be started up within a week or two.

Hannah Furnace of the Republic Iron & Steel Company, at Youngstown, is expected to start on Saturday, February 9. The furnace has been extensively improved, and two large Weimer blowing engines are being installed. The furnace will start on Bessemer steel and is expected to turn out about 300 tons per day.

The stockholders of the Jenifer Furnace Company met at Jenifer, Ala., January 24, and re-elected the old board of directors. The following officers were elected: W. H. Weller, president and treasurer; W. A. Thomas, vice-president and general manager; E. F. Niedeckens, secretary. The old charcoal furnace is being torn down and in its place an up to date coke furnace will be built with a capacity of 125 tons per day, which the company hope to be able to put in blast about April 1.

Machinery.

The G. L. Anderson Brass & Bronze Company, Birmingham, Ala., have been incorporated with a paid in capital of $12,000. The new company have succeeded to the business of the G. L. Anderson Company, Limited, and are now occupying the bronze and brass foundry formerly operated by the latter. A new plant will shortly be built and with enlarged facilities the company intend adding to their present line the manufacture of machin-

ery and railroad brasses. The officers of the company are: G. L. Anderson, president, and Abe Rich, secretary and treasurer.

The Dickson Mfg. Company at Scranton, Pa., manufacturers of locomotives, mining machinery and stationary engines, are about to erect a large addition to their machine shops, 50 x 115 feet and 61 feet in the clear, built of steel and brick and fitted with a large and powerful crane. The new building is to be used exclusively for erecting and assembling.

James Leffel & Co., Springfield, Ohio, manufacturers of turbine water wheels, are building an addition, 80 x 225 feet, to their plant. The new building will be constructed of steel and fitted up with electric traveling cranes and all the modern equipment required for the rapid handling of large castings. The firm now employ 170 men, and as soon as the addition is completed, which will be within the next few months, the working force will be materially increased.

The South Bend Malleable Iron Company, South Bend, Ind., manufacturers of refined air furnace malleable iron castings, have increased their capital stock from $75,000 to $100,000. This company organized about a year ago, and have just completed their plant, which consists of four large brick and steel buildings, situated on a 9-acre tract of land at the junction of the Lake Shore & Michigan Southern and Grand Trunk railroads. The company report a number of large orders in hand.

B. H. Carrier has retired from the firm of Walker & Carrier, machinists, Youngstown, Ohio. C. L. Walker will continue the business under his own name.

The Ideal Machine Works, 328 Asylum street, Hartford, Conn., designers and builders of machinery, tools, &c., have incorporated. The company have their plant completely equipped and intend making a specialty of small tools, tappers and screw machine tools.

The Ames Iron Works, Oswego, N. Y., manufacturers of engines and boilers, have incorporatel with a capital stock of $100,000. The new company succeed to the business of the copartnership formerly styled Ames Iron Works, and continue under the same management and along the same lines of business as the old firm. The officers are: Arthur L. Merriam, president; Allen Ames, vice-president and treasurer; Alfred H. Ames, secretary.

The Lake Erie & Western Railroad Company have purchased 50 acres of land at Indianapolis, Ind., with the intention of locating large shops. An official of the company states that the shops now at Lima, Peru and Lafayette will, in time, be abandoned for the purpose of concentrating everything in this line at Indianapolis, the natural center of the system.

The W. A. Jones Foundry & Machine Company, Chicago, will, about March 1, remove their old foundry from its present location at 55 South Jefferson street, and will consolidate it with their new works recently completed at North avenue and Noble street. The company will have a greatly enlarged capacity in the new plant, both in the foundry and machine department. Their offices have for some time been located at the new works.

The Maywood Foundry & Machine Company's stockholders held their annual meeting in Chicago on January 29. They voted to increase the capital stock of the company from $75,000 to $100,000, and elected the following officers: F. E. Lonas, president; I. L. McCord, vice-president; H. W Boies, secretary, and O. H. Davison, superintendent.

The Standard Automatic Engine Company, Oil City, Pa., have just shipped two 150 horse-power engines to the Empire Gas & Fuel Company, Wellsville, N. Y.; two 250 horse-power to the American Natural Gas Company, Pittsburgh, Pa., and are preparing to ship two 500 horse-power engines direct connected to 300-kw. railway generators for the Oil City Street Railway Company, and four more of same size are under way for another street railway company.

The Tyrone Foundry & Machine Company, Tyrone, Pa., have recently added a 60-inch planer and an acetylene gas plant to their equipment. They have contracted to build two Morris rock crushers for parties in New York State, and two more for parties in Pennsylvania. The works are running day and night.

F. G. Fernstrum, boiler maker, Menominee, Mich., has secured a contract for the manufacture of 100 boilers for the A. W. Stevens Company. He expects also to receive the contract for four boilers and a digester for the new sulphite mill to be built by the Menominee & Marinette Paper Company.

The Carl Anderson Company, machinists and manufacturers of the Gus gas and gasoline engines, will remove from their present location at Fulton and Jefferson streets, Chicago, about February 10. The company have secured quarters at 23 to 27 North Clinton street, where they will have more than double the room. They will also install new equipment consisting of lathes, a bolt cutter, a boring mill and various other machinery. The force of men will be materially increased and the capacity of the plant doubled.

The American Blower Company, Detroit, Mich., have under consideration plans for a new power plant and an addition to their factory for the manufacture of fans.

The Standard Boiler Mfg. Company, Harvey, Ill., have been granted a license to incorporate with a capital of $25,000. The incorporators are Arthur Irwin, Edwin G. Lancaster and Otto Gresham.

Kepler & Gerlock, Huntingdon, Pa., contemplate resuming the manufacture of engines at the plant formerly operated by H. H. Lane Mfg. Company. They also intend increasing their facilities for the manufacture of and jobbing of machinery supplies.

The Titusville Iron Company, Titusville, Pa., have just completed an addition to their boiler department consisting of a brick and iron structure, 75 x 185 feet. They have recently installed a new set of bending rolls, 20 feet long, two additional punches, slitting shears and large planer. The new addition is equipped with an electric crane. In the center of the works the power plant has been located. The power is created by five gas engines, which transmit pneumatic, hydraulic and electric power. The company had a larger total of business in 1900 than any previous year, and prospects for the present year are very promising.

The Hebb Coke Drawer Company of Connellsville, Pa., will soon apply for a charter with a capital of $15,000, divided into 600 shares. The company propose to manufacture a coke drawing machine invented by John A. Hebb, a coal miner, of Uniontown. It is claimed that this machine will greatly economize the cost of drawing coke from bee hive ovens, such as are used in the Connellsville region. A plant to make the patent coke drawer will either be erected in the coke region, or a contract will be made with some concern to make them.

A large new foundry is to be built in Youngstown, Ohio, by local capitalists. It is stated that work on the building of the foundry will be commenced in a short time, nearly all the stock having been subscribed.

The Scott Leather Machine Company, who recently incorporated, are having their hide and skin seasoning machines constructed at the works of the Upton Machine Company, Beverly, Mass. They make their headquarters for the present at 17 State street, the New York City office of the Upton Company.

The Morgans & Wilcox Mfg. Company, Middletown, N. Y., manufacturers of printers' machinery, have added a general machine construction and repair department to their plant.

The Canadian Rand Drill Company, at Sherbrooke, Quebec, have shipped to the Rossland, B. C., Great Western Mines of the British American Corporation a 600 horse-power compressor, which has two stage air cylinders 36 inches and 22 inches in diameter by 48 inches stroke. It is to be driven by an electric motor through the medium of a rope drive. The driving wheel is 18 feet in diameter by 51 inches face, is grooved for 22 ropes 1½ inches in diameter, and has a double set of arms made in halves and weighs about 40,000 pounds. The complete machine weighs about 150,000 pounds and makes the third shipped to the British American Corporation, the two former being direct connected to compound Corliss engines. The company will soon ship two more compressors to the Dominion Coal Company for their mines at Glace Bay, C. B., which will be direct connected and of about the same dimensions as the above, with a capacity of about 3000 cubic feet of free air per minute.

J. E. Johnson, Paris, Tenn., proprietor of the Paris Machine Shops, is contemplating the establishment of a foundry in that city.

The John F. Byers Machine Company of Ravenna, Ohio, have purchased the plant of the Ravenna Boiler Company. For some time past they have used nearly the entire output of the boiler works and have been frequently delayed by the inability to secure goods fast enough. The capacity of the plant will be increased.

The Fox Furnace Company of Cleveland have closed a deal with the Ely Realty Company of Elyria, Ohio, whereby their plant is to be removed to that city. They will receive a deed of ten acres of land and a bonus of $10,000, and agree to erect a plant 325 x 70 feet and to employ not less than 100 men. The Fox Furnace Company are enjoying a rapidly increasing business and their plant in Cleveland would not permit of large improvements; hence the change.

The Webster, Camp & Lane Company of Akron, Ohio, manufacturers of hoisting and conveying machines, deny the report that has been in circulation to the effect that they are preparing to erect a plant at Barberton, Ohio. They have been offered inducements to locate in that city, but have no intention of making the change.

The stockholders of the H. B. Smith Machine Company, Smithville, N. J., at their annual meeting on January 24, re-elected the same old board and the board elected the same officials, who have appointed Thos. R. Finley assistant treasurer.

The Globe Iron Works, 2427 University avenue, Southeast, Minneapolis, Minn., manufacturers of white gasoline engines, advise us that their plant is running night and day on an order for 200 engines.

The Vincent Valve Company have increased their capital stock from $25,000 to $75,000. The company have recently moved from Owosso, Mich., to Sandusky, Ohio, where they have erected modern buildings adapted for their special work, which is the manufacture of adjustable wedge straightway valves.

Walsh & Weidner of Chattanooga are doing the entire iron work, except the castings, including furnace stack, skip hoist, three hot blast stoves and five upright water tube boilers, in connection with the new furnace which the Roane Iron Company, Rockwood, Tenn., are building at their plant in that city.

Hardware.

The Frank Happell Mfg. Company, 433-435 East Pearl street, Cincinnati, Ohio, manufacturers of stove polish and paint specialties, have taken into partnership Julius Bepler, a well-known business man of that city. The company intend enlarging the business and will make every effort to extend their business with the hardware and stove merchants of the country.

The Ornamental Iron & Wire Company of Chattanooga, Tenn., are now five years old and have succeeded in building up a good business in their line. They are headquarters for all kinds of ornamental metal work and are also equipped to furnish all kinds of builders' iron work promptly. Some of their principal products are all kinds of iron and wire fencing for residences, churches, court houses, cemeteries, parks, &c.; office, bank and balcony railings; window guards, elevator inclosures, grills, fire escapes, iron stairways, fire proof doors and shutters, metal ceilings, sidings and roofing; wire floral designs, iron and wire chairs and settees, also cast and wrought iron columns, sills, &c. The company's 100-page illustrated catalogue with price-list will be promptly sent to the trade upon request.

The directors of the Oneida Community at a recent meeting decided to make some important changes in the location of their manufactories. It has been decided to remove the trap and steel chain shops from Niagara Falls to Sherrill and consolidate all of the silk shops at Kenwood, N. Y. At present a large silk shop is being operated at Sherrill. This change means the acquisition of a factory from Niagara Falls employing 100 men. The removal of the trap and chain factory from Niagara Falls was decided upon by reason of the fact that the factory at Niagara Falls was inadequate for carrying on the increased business. As a change of some kind was necessary the directors voted to remove the entire industry to Sherrill, where new buildings will be erected in place of the silk shops, which will occupy new quarters at Kenwood. The plant at Niagara Falls will accordingly hereafter be devoted exclusively to the production of the company's line of silver plated ware. Work has already been commenced on these changes, which will be accomplished some time in the spring.

Miscellaneous.

The Bessemer Coke Company, Lewis Block, Pittsburgh, Pa., have announced that they will grant the demands of their employees at the Duquesne Works, Bradenville. On December 1, 1900, the Bessemer Coke Company notified the miners that after January 1, 1901, wage rates paid in the Connellsville coke region would be put in force at the Bradenville Works. This rate is 20 cents per 100 bushels lower than the Latrobe district rate, and the miners refused to accept the reduction and went out on a strike. After several unsuccessful attempts to start up with new men, serious trouble was threatened and the company made an effort to compromise with the strikers. Not succeeding, an indefinite shut down was ordered, machinery and stock being shipped to their other plants. Last week their mines at the Humphrey plant caught fire and are still burning. Being unable to fill their orders the company were obliged to make terms with their men at Duquesne, and on Monday their 300 employees will go back to work, the company having acceded to the miners' demands.

At the meeting of the stockholders of the Steel and Iron Aluminum Coating Company, Connellsville, Pa., held in Camden, N. J., on January 12 the old board of directors were re-elected. At the directors' meeting held at the offices of the company in Connellsville, on January 25, the following officials were elected: Geo. J. Humbert, president and general manager; H. P. Snyder, vice-president; Thomas Walkup, secretary, and W. H. Kirchhoff, treasurer. This concern have just about finished the building of a large plant in Connellsville for the manufacture of aluminum coated steel sheets, aluminum coated pipe and fittings, aluminum coated wire, aluminum coated nails, &c.

The W. T. Eaton Mfg. Company of Chicago have been incorporated to manufacture the Sanderson portable grain elevator and adjustable roller-bearing axles. They will manufacture these goods at Libertyville, Ill., where they have erected a two-story brick factory, 60 x 140 feet. The main office of the company is at 4 Sherman street, Chicago. The incorporators are W. T. Eaton, F. P. Lymond, and R. J. Proctor. The capital stock is $50,000.

James M. Guffey of Pittsburgh, who made a large oil strike recently in Southeastern Texas, has placed a contract with the Riter-Conley Mfg. Company of Pittsburgh, for five large oil storing tanks. The tanks will have a capacity of about 50,000 barrels of oil each. Each tank will be 130 feet in diameter and 35 feet high. There will be two or three smaller tanks with a capacity of 30,000 to 35,000 barrels each. The Riter-Conley Mfg. Company are sending complete compressed air riveting and calking machines to Texas. All records will be broken in the construction of these tanks.

The Empire Metal Company, Syracuse, N. Y., manufacturers of babbitt metal, &c., have purchased the Hayden and Benford blocks on South Clinton street, and are entirely reconstructing the buildings. When completed they will be used for light manufacturing and jobbing purposes. A 40-foot square in the rear of the buildings will be inclosed and carried up to the top floor, making a large amount of additional floor space.

The New York Central & Hudson River Railroad Company have contracted with the American Bridge Company for two draw bridges, which are to be operated by gasoline engines, one of them to be located near New Hamburg, N. Y., and the other one near Little Ferry, N. J. Both are through plate girder bridges with double track.

The Bretz Cycle Mfg. Company, Syracuse, N. Y., have incorporated to manufacture bicycles. The Stearns bicycle agency of that city act as general selling agents for the Bretz Company.

The Remington Automobile & Motor Company, Ilion, N. Y., are looking around for permanent quarters in a larger center which shall afford better facilities for their business.

The American Smoke Consumer Company, 31-33 Pine street, New York City, have incorporated with a paid in capital of $50,000. The officers are: Ashley W. Cole, president; Michael D. Murray, vice-president; George H. McFalls, secretary and treasurer. A number of their smoke consuming devices are now in use and the company are preparing to market them in large quantities.

The Sterlingworth Railway Supp'y Company, Eastern, Pa., have received an order for 80 carloads of brake beams.

The H. W. Caldwell & Son Company, general machinists, Western avenue and Eighteenth street, Chicago, have completed plans for the erection of an addition to their plant. The new building is to be four stories high, of mill construction, and will be utilized as a warehouse. It will adjoin the other buildings, will have a frontage of 70 feet and will be 160 feet deep.

The Kenwood Bridge Company, with offices in the First National Bank Building, Chicago, report that they are about to move into the new addition to their works just completed at Kenwood, Ill. The new building is of steel and iron construction, is 50 feet wide and 200 feet long, and will be used as a blacksmith shop. The company are also installing new equipment, consisting of bolt headers, bending rolls, bulldozers and various other machinery. They are enlarging their power plant by the addition of an Erie boiler. The capacity of the works will be increased 25 per cent.

The American Bridge Company have a contract for furnishing the steel work to the Bureau of Yards and Docks for building No. 22 at the New York Navy Yard.

The Ramapo Foundry Company.—The Ramapo Foundry Company, Mahwah, N. J., have completed their new plant and made their first cast February 1. The main building, of ribbed glass and steel construction, is 380 x 100 feet and is equipped wtih two traveling cranes and No. 8 and No. 3 Whiting cupola, capable of melting 17 tons of iron per hour. In addition there is a brick power house, 36 x 76 feet, in which are installed two 150 horse-power Sterling water tube boilers, one 200 horse-power Worthington jet condenser and a 100 horse-power direct connected Westinghouse engine; a frame machine and pattern shop, 50 x 70 feet, two stories high; a frame coke house, 32 x 60 feet, two stories high; a brick sand house, 32 x 60 feet. The works are located alongside the Erie Railroad Company's main line and are fully provided with switches for the proper handling of all the different materials which will be used. All the machinery will be operated by electricity, and a number of moding machines have been installed for the purpose of turning out brake shoes, which, with the making of railroad castings, will be the principal business of the company. The officers are W. W. Snow, president; Otis H. Cutler, secretary and general manager; E. J. Snow, treasurer.

New Records at Duquesne.—In one night turn, recently, the new 40-inch mill in the new basic open hearth plant of the Duquesne Steel Works of the Carnegie Steel Company, at Duquesne, Pa., broke the record in rolling open hearth steel. In 12 hours, 524 tons of open hearth billets were rolled. We may add that this new open hearth mill made during January over 22,000 tons of billets. When the fact is taken into consideration that the mill has only been in operation a month, and the machinery is not yet in thorough working condition, these are remarkable records, and reflect great credit upon Joseph E. Schwab, who is general superintendent of the plant. There is no doubt but that these records will be eclipsed when the machinery is in perfect running order.

The Scully Steel & Iron Company, Chicago, Ill., U. S. A., have just closed a contract for the export of plate steel, structural steel, rivets, sheet copper and machinery, amounting to $250,000.

The Iron and Metal Trades.

It seems probable that the purchase of the stock holdings of Andrew Carnegie in the Steel company which he has created will be made by a syndicate, who are arranging for a further consolidation and a harmonizing of interests. We have it on the highest authority that the negotiations have not been finally closed. No announcement has yet been made as to the properties to be included in the new consolidation, nor of the plans for floating it. If the negotiations are carried to an issue the Iron trade will have a new situation to face, and new problems will come before every one connected with the Iron industry. As yet it is premature to speculate on them.

The Iron and Steel market, as a whole, is quiet, as it is apt to be at this season of the year. Aside from one sale of 6000 tons of Southern Foundry Iron to a Pipe interest, reported from Chicago, little appears to have been done, and buyers generally are purchasing from hand to mouth. In Bessemer Pig a Steel plant in Western Pennsylvania has purchased 10,000 tons and the market is steady. In Eastern Pennsylvania there were sales of Basic Pig to the extent of 8000 to 10,000 tons.

Contrary to current reports, no meeting of the Rail and Billet associations has been called for this week. The Rail trade has been rather quiet. Spot Steel continues to command a small premium, the heavy producers being behind on deliveries. A consolidation or community of interests among the large companies would be particularly powerful in this branch and would probably continue in an emphasized manner the policy of the Billet pool, with its tendency to force outsiders to erect their own Open Hearth Steel plants.

Good reports come from various trade centers relative to the volume of business in Structural Material. Pittsburgh reports the placing of the Frick Building and some other contracts, while Chicago notes some good business.

For a time there was some irregularity in prices of Steel Bars in certain Western districts, but the market is steadier there now. The tonnage seems to be good. In Eastern Pennsylvania and the tidewater markets business is dull and an easier feeling prevails.

Sheets are very active in all sections of the country.

The Spelter industry seems to be passing through one of its periodical throes of misery. The demand is light, while, on the other hand, the miners are trying to work up the price of Ore.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Feb. 6, 1901.	Jan. 30, 1901.	Jan. 9, 1901.	Feb. 8, 1900.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	*$15.25*	$15.25	$15.50	$22.75
Foundry Pig, No 2, Southern, Cincinnati	*13.25*	13.25	13.75	20.25
Foundry Pig, No. 2, Local, Chicago.	*14.50*	14.50	15.00	23.50
Bessemer Pig, Pittsburgh	**13.50**	13.25	13.00	24.90
Gray Forge, Pittsburgh	*13.00*	13.00	13.15	21.00
Lake Superior Charcoal, Chicago	*18.50*	18.50	19.50	25.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	19.75	19.75	19.75	33.00
Steel Billets, Philadelphia	21.00	21.00	21.00	36.50
Steel Billets, Chicago	20.75	20.75	20.75	nom.
Wire Rods (delivered)	35.00	35.00	35.00	nom.
Steel Rails, Heavy, Eastern Mill	26.00	26.00	26.00	33.60
Spikes, Tidewater	1.50	1.50	1.50	2.65
Splice Bars, Tidewater	*1.30*	1.30	1.35	2.30
OLD MATERIAL:				
O. Steel Rails, Chicago	12.00	12.00	12.00	19.00
O. Steel Rails, Philadelphia	**15.50**	15.50	15.00	23.00
O. Iron Rails, Chicago	17.00	18.00	17.00	23.50
O. Iron Rails, Philadelphia	18.00	18.00	18.00	26.00
O. Car Wheels, Chicago	16.50	16.50	16.50	24.00
O. Car Wheels, Philadelphia	17.00	17.00	17.00	22.00
Heavy Steel Scrap, Chicago	12.00	12.00	12.00	17.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	*1.40*	1.40	1.45	2.20
Common Iron Bars, Chicago	1.45	1.45	1.45	2.30
Common Iron Bars, Youngstown	1.30	1.30	1.30	2.15
Steel Bars, Tidewater	*1.38*	1.38	1.40	2.40
Steel Bars, Pittsburgh	1.25	1.25	1.25	2.20
Tank Plates, Tidewater	1.55	1.55	1.55	2.35
Tank Plates, Pittsburgh	1.40	1.40	1.40	2.20
Beams, Tidewater	*1.63*	1.63	1.65	2.40
Beams, Pittsburgh	1.50	1.50	1.50	2.25
Angles, Tidewater	*1.53*	1.53	1.55	2.40
Angles, Pittsburgh	1.40	1.40	1.40	2.25
Skelp, Grooved Iron, Pittsburgh	*1.45*	1.40	1.50	1.90
Skelp, Sheared Iron, Pittsburgh	*1.50*	1.50	1.55	2.35
Sheets, No. 27, Pittsburgh	2.85	2.85	2.85	2.90
Barb Wire, Galv., f.o.b. Pittsburgh	**2.90**	2.90	2.80	3.80
Wire Nails, f.o.b. Pittsburgh	**2.30**	2.30	2.20	3.20
Cut Nails, Mill	**2.05**	1.95	1.95	2.50
METALS:				
Copper, New York	*16.87½*	16.87½	17.00	16.25
Spelter, St. Louis	*3.77½*	3.80	3.95	4.65
Lead, New York	*4.37½*	4.37½	4.37½	4.70
Lead, St. Louis	*4.17½*	4.15	4.17½	4.60
Tin, New York	*26.35*	26.25	26.50	29.25
Antimony, Hallett, New York	9.25	9.25	9.25	9.75
Nickel, New York	55.00	55.00	55.00	38.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.84

Chicago. *(By Telegraph.)*

Office of *The Iron Age*, 1205 Fisher Building, CHICAGO, February 6, 1901.

The second month of the year opens encouragingly for manufacturers of finished products. Manifestations of weakness which had been supposed to be developing in some quarters have disappeared, and increased activity is noted, particularly in Merchant Bars. The scarcity of Steel Billets is imparting much more firmness to the long line of Steel products.

Pig Iron.—The most important transaction of the week was the purchase of about 6000 tons of Southern Pig Iron by a local house having a Cast Iron Pipe works in Ohio. The Iron purchased was No. 4 Foundry and Gray Forge, which grades have for some time been accumulating at Southern furnaces, but it is understood that fairly good prices were obtained by the sellers considering the circumstances. This deal has been pending for a little time, and the fact that the prices made were considerably above those of last fall would seem to settle the question that consumers whose contracts were made before or shortly after the election will not be able to renew them at the prices then prevailing as they had hoped to do. Inquiries for several round lots are in the market, and it is believed that the coming week will see much more business placed. Quite a number of contracts made last fall will shortly expire, and must soon be renewed. Southern freight rates have been reduced 20c., but this has not changed quotations, as the reduction had previously been discounted. It is stated that some cut prices, which are now being made on Southern Iron, are not on Standard grades, but off grades, which the makers would like to move. Northern Irons are held closely to our quotations, as most of the local furnaces are well supplied with orders covering their output far into the future. Shipments are heavy,

the deliveries of local Iron in January being stated to have surpassed previous records. Quotations are as follows:

Lake Superior Charcoal	$18.50 to $19.00
Local Coke Foundry, No. 1	15.00 to 15.50
Local Coke Foundry, No. 2	14.50 to 15.00
Local Coke Foundry, No. 3	14.00 to 14.50
Local Scotch, No. 1	15.00 to 15.50
Ohio Strong Softeners, No. 1	16.00 to 16.25
Southern Silvery, according to Silicon	15.50 to 16.00
Southern Coke, No. 1	14.85 to 15.35
Southern Coke, No. 2	14.35 to 14.85
Southern Coke, No. 3	13.85 to 14.35
Southern Coke, No. 1 Soft	14.85 to 15.35
Southern Coke, No. 2 Soft	14.35 to 14.85
Foundry Forge	13.35 to 13.85
Gray Forge and Mottled	13.35 to 13.85
Southern Charcoal Softeners, according to Silicon	15.00 to 17.00
Tennessee Silicon Pig	16.50 to 18.00
Alabama and Georgia Car Wheel	20.35 to 21.00
Malleable Bessemer	15.00 to 15.50
Standard Bessemer	15.00 to 15.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon	17.50 to 18.50

Bars.—Bar Iron is in increased demand. Large contracts have been placed during the week, and the situation steadily grows stronger. Steel Bars are in excellent shape with large manufacturers so well sold up that it is difficult for them to arrange to take additional business for anything like early delivery. Heavy consumers who had believed their requirements fully covered are in the market for further quantities. One inquiry of this character calls for 2500 tons. The scarcity of Steel Billets contributes to the strength of the Bar situation. Mill shipments of Common Iron are quoted at 1.45c. to 1.50c.; Soft Steel Bars, 1.40c. to 1.45c., and Hoops, 1.85c., base, Chicago. Jobbers report a continued heavy demand for shipment from stock. Prices of small lots are maintained at 1.75c. to 1.80c. for Common Iron, 1.65c. to 1.75c. for Steel Bars, and 2.10c. to 2.35c. for Hoops.

Car Material.—A continuous demand is reported. An inquiry for 8000 Axles was turned down by a large manufacturer because of inability to make the shipments desired, which were not to be given until April. Good orders are being received for Bars, Channels and other material from not only car builders, but from railroad companies.

Structural Material.—An excellent trade is reported in small lots both for building purposes, and from the independent bridge companies. The bridge companies are purchasing small lots, even when they have contracts, preferring to let their contracts take care of future business. A Milwaukee building requiring about 500 tons was placed under contract during the week, but the Chicago projects recently reported are still in abeyance. It is expected that the longer these matters are deferred the heavier will be the number of such enterprises to be placed toward spring. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.65c.; 18 inches and over, 1.75c.; Angles, 3 inches and over, 1.55c.; Angles, under 3 inches, 1.55c. rates; Tees, 1.70c.; Universal Plates, 1.55c. to 1.60c. Small lots of Beams and Channels from local yards are quoted at 2.10c. to 2.25c.; Angles, 1.60c. to 1.70c. rates, and Tees, 1.75c. to 1.85c.

Plates.—The Plate situation has developed much greater strength. The offerings by brokers alluded to last week were promptly taken up, and the supply from that source appears to have been completely absorbed. Manufacturers who have heavy contracts are purchasing or endeavoring to purchase considerable quantities from other mills and report difficulty in finding sufficient tonnage to satisfy their requirements. Sales by the local mills are steadily running ahead of the output. Jobbers are having an increased demand, which is much in excess of their experience ordinarily at this season. It would not be surprising if prices were to be advanced. Mill shipments of Tank Plate, ¼-inch and heavier, in carload lots, are quoted at 1.55c. to 1.60c., Chicago; Flange, 1.65c.; Marine, 1.75c. Jobbers quote small lots from store at 1.80c. to 2c. for Tank, and 2.10c. to 2.25c. for Flange.

Sheets.—A remarkable demand is in progress for both Black and Galvanized Sheets not only from the mills, but also from local jobbers' stocks. The demand for Black Sheets is especially peculiar, as at this season Black Sheets are ordinarily quiet. The demand is very heavy for Galvanized Sheets, and stocks still continue inadequate to the demand. It might be expected, under the circumstances, that jobbers' prices on Galvanized Sheets would be advanced, as they say they have seldom sold on such a small margin. Mill shipments of No. 27 Black are quoted at 3.15c., Chicago, while Galvanized Sheets are held at 70 and 7½ off. Small lots from stock are quoted at 3.30c. to 3.40c. for No. 27 Black, 2.40c. for No. 16, 2.30c. for No. 14, 2.10c. for No. 12, 2c. for Blue Annealed No. 10, and 70 off for Galvanized.

Merchant Pipe.—A moderately good demand is reported with prices firmly held. Manufacturers' prices, random lengths, are as follows:

	In carloads.		Less than carloads.	
	Blk.	Galvd.	Blk.	Galvd.
⅛ to ½ inch and 11 to 12 inches	59.2	46.2	54.9	40.9
¾ to 10 inches	66.7	53.3	61.9	49.9

Boiler Tubes.—Jobbers are steadily in receipt of a good demand from stock, and quotations are well maintained, notwithstanding the tendency to weakness among manufacturers. We quote from store as follows:

	Steel.	Iron.
1 to 2¼ inches, inclusive	50	40
2½ inches	50	42½
2¾ to 5 inches	60	50

Rails and Track Supplies.—Sales of Heavy Sections of Steel Rails footed about 20,000 tons during the week. Plenty of business is offering, but for deliveries which make it difficult for the mills to accept such orders. A free demand is in progress for Light Rails with a continued large inquiry for export. The local mill has advanced its price $1 per ton on Light Rails for export. Prices on domestic business are still $26 for Heavy Sections and $25.50 to $28 for Light Sections, according to weight. Track Supplies are in good demand, with Splice Bars quoted at 1.30c. to 1.40c.; Spikes, 1.60c. to 1.75c., from mill, and 1.85c. rates from store. Track Bolts, with Hexagon Nuts, 2.55c. to 2.60c., and with Square Nuts, 2.40c. to 2.45c.

Billets.—Inquiries for Bessemer Billets continue to come up, but buyers are having considerable trouble in placing orders. Manufacturers are so well sold up that some are obliged to purchase from others, and in one case a manufacturer is quoting $1 per ton above the combination price. Sales have been made of several thousand tons of Open Hearth Billets. Bessemer Billets are quoted at $20.75 to $21.75; Open Hearth Billets, $21.75; carload lots of Open Hearth Forging Billets, $24 to $25, and small lots of Open Hearth Billets from store, 1.15c. to 1.25c. In some cases higher prices than these have been obtained for Open Hearth Billets desired for special purpose.

Merchant Steel.—The higher grades of Merchant Steel are in good demand, with considerable contracting still being done to cover requirements to July. New business in other grades is light, but manufacturers report their mills still crowded with work. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.75c. to 1.90c.; Smooth Finished Tire, 1.75c. to 1.95c.; Open Hearth Spring Steel, 2.15c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.70c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6c. for carloads and 7c. from store; Specials, 13c. upward.

Old Material.—The market is quiet, and inclined to weakness, as large consumers are at present well supplied with stock. The following are approximate quotations per gross ton:

Old Iron Rails	$17.00 to $17.50
Old Steel Rails, mixed lengths	12.00 to 12.50
Old Steel Rails, long lengths	14.50 to 15.00
Heavy Relaying Rails	20.00 to 22.00
Old Car Wheels	16.50 to 17.00
Heavy Melting Steel Scrap	12.00 to 12.50
Mixed Steel	9.50 to 10.00
No. 1 Mill	10.50 to 11.00
No. 2 Mill	9.00 to 9.50
No. 1 Busheling	8.50 to 9.00
No. 2 Busheling	7.50 to 8.00

The following quotations are per net ton:

Iron Fish Plates	$16.00 to $16.50
Iron Car Axles	18.50 to 19.00
Steel Car Axles	15.00 to 15.50
No. 1 Railroad Wrought	14.00 to 14.50

No. 2 Railroad Wrought	12.00 to	12.50
Shafting	15.00 to	16.00
No. 1 Dealers' Forge	11.00 to	11.50
No. 1 Country Wrought	9.00 to	10.00
Iron Axle Turnings	9.00 to	9.50
Soft Steel Axle Turnings	8.00 to	8.50
Machine Shop Turnings	7.00 to	7.50
Wrought Drillings	5.00 to	5.50
Cast Borings	3.00 to	3.50
Mixed Borings, &c	4.00 to	4.50
No. 1 Boilers, cut	9.00 to	9.50
No. 2 Boilers, cut	7.50 to	8.00
Boiler and Ship Scrap	8.00 to	8.50
Heavy Cast Scrap	11.50 to	12.00
Stove Plate and Light Cast Scrap	8.50 to	9.00
Railroad Malleable	12.00 to	12.50
Agricultural Malleable	10.50 to	11.00

Metals.—Carload lots of Lake Superior Copper are unchanged at 17½c., and Casting Brands at 17¼c. Pig Lead prices are firm at the rates which have so long been maintained—namely, 4.32½c. for Desilverized and 4.42½c. for Corroding in 50-ton lots.

Coke.—Rumors are circulated every two or three days that freight rates have been reduced from the Coke regions, but so far they have all been groundless. Prices are unchanged at $4.50 to $5 for 72-hour Coke.

Philadelphia.

Office of *The Iron Age*, Forrest Building, Philadelphia, Pa., February 5, 1901.

The week has been the dullest in the year so far, sales and inquiries being of an extremely limited character. It is a little disappointing after such unusual activity as there was around the holidays to find a sharp cutting down at the time when a picking up was expected. Nevertheless there is no apparent reason for any permanent shrinkage in the volume of business, so that the present dullness may be due to an anticipated readjustment in prices, which for Pig Iron looks like a slight decline, but the reverse as regards Steel. Intimations from the West are to the effect that the large Steel concerns have arrived at an understanding, which, if correct, means firm if not higher prices. The tenacity with which prices of Steel have been held during the past two or three months indicates more or less of an advance in the near future, and an announcement to that effect should cause no surprise, as at most it is probably only a question of a few days' time. It is a waiting market, however, with order books fairly well covered, new business being somewhat in abeyance pending definite action in regard to prices.

Pig Iron.—The market during the week has been very unsatisfactory and sales smaller than for a long time past. This does not necessarily indicate that consumption is less or that conditions are less favorable, but in the meanwhile there is certainly no disposition to buy metal in advance of requirements. The offerings are somewhat liberal, and although furnace banks are sparsely covered and stocks in buyers' yards are low, yet from a seller's standpoint the market is full of Iron and orders difficult to secure unless by making concessions of more or less importance. The basis of this feeling is probably because there is something of a dullness in the foundry trade, while production of Foundry grades is larger than it has been for a long time past. The natural result is that makers are anxious to provide for contingencies by securing a line of orders for spring and summer delivery at as near to present figures as circumstances will permit. There are too many of this mind, however, and as consumers recognize this fact they are as unwilling to buy as makers are anxious to sell. It may be remarked, however, that the difference in prices from last week is very trifling; how much difference there would be if buyers were to bid for large lots remains to be seen. Small and medium sized lots are taken at about the following figures for city or nearby deliveries: No. 1 X Foundry, $16 to $16.25; No. 2 X Foundry, $15.50 to $16; No. 2 Plain, $14.75 to $15.25; Standard Gray Forge, $14.25 to $14.50; Ordinary Gray Forge, $13.75 to $14; Basic (Chilled), $14.50 to $14.75; Basic (Sand), $14 to $14.25.

Billets.—There has been no change in prices so far, but it is generally understood that a readjustment is pending because of the change in freights. Present quotations are $21 for Bessemer and $22 for Open Hearth Steel.

Plates.—The market has been a little quiet during the past week, but for the time being mills have enough work to go on with. There is a good deal of business in prospect, but in the meanwhile several important projects which were looked upon as likely to mature at an early date are still lingering in the dim future. The combination in regard to prices enables manufacturers to maintain firm quotations, which remain as for some weeks past—viz., for seaboard and nearby points for Plates ¼-inch and thicker, 1.55c. to 1.60c.; Universals, 1.55c. to 1.60c.; Flange, 1.65c. to 1.75c.; Charcoal Iron Plates, C. H. No. 1, 2.25c.; Best Flange, 2.75c.; Fire Box, 3.25c.

Structural Material.—The same remarks would apply to this department as stated in regard to Plates. There is no scarcity of work at present and there appears to be a great deal more in prospect, but no great amount has been placed during the past week or two. Prices unchanged as follows for seaboard or nearby points: Angles, 3-inch and upward, 1.65c. to 1.75c.; less than 3-inch, 1.50c. to 1.60c.; Beams and Channels, 15-inch and upward, 1.65c. to 1.75c.

Bars.—There is a distinct dullness in the Bar trade and prices are easier. Some of the mills are running moderately full, but as a rule they are all anxious to pick up a new line of business, hence weakness and irregularity in prices, which are nominally about as follows for city and nearby deliveries: Steel Bars are firm at 1.40c. to 1.50c. and Iron Bars from 1.40c. to 1.50c.

Sheets.—There is a continued good demand for Sheets and mills have all the business they can handle, with excellent prospects for its continuance. Prices firm and for best Sheets as follows (common Sheets two-tenths less): No. 10, 2.25c.: No. 14, 2.45c.; No. 16, 2.65c.; Nos. 18-20, 3.15c.; Nos. 21-24, 3.25c.; Nos. 26, 27, 3.30c.; No. 28, 3.45c. to 3.50c.

Old Material.—There is a very firm market for Steel and large sales of choice stock have been made at full prices. Other material is dull and bids are in most cases 25c. to 50c. less money than was the case during last month. Bids and offers for deliveries in buyers' yards are about as follows: Choice Railroad Scrap, $18 to $19; No. 1 Yard Scrap, $13 to $14; No. 2 Light Scrap, $11.50 to $12.50; Machinery Cast, $14 to $14.50; Heavy Steel Scrap, $15.75 to $16.25; Old Iron Rails, $18 to $19; Old Steel Rails, $15.50 to $16; Wrought Turnings, $10 to $10.50; Cast Borings, $8 to $8.25; Old Car Wheels, $17 to $18; Iron Axles, $20 to $22; Steel Axles, $17 to $18.

St. Louis. *(By Telegraph.)*

Office of *The Iron Age*, 1205 Chemical Building, St. Louis, February 6, 1901.

Pig Iron.—Some of the trade report the demand for Pig Iron as of an improved character this week, whereas others state that the orders they received were few and for light tonnage. Foundry Irons were called for in lots ranging from single cars to 100 tons. Foundrymen seem to have lots of work on hand, but show no haste to enter the market for additional Iron. Those having Iron still due them show their need for material by sending in urgent demands to hurry shipments forward. A 1000-ton order was closed for Missouri Basic Pig Iron this week. Steel foundries in this territory are in active operation, the demand being very strong for car castings especially. The railroads north of the Ohio River in Central territory have made a reduction of 20c. per ton on Pig Iron, effective Tuesday, February 5. This does not affect St. Louis rate; it applies, however, to Quincy, Peoria and Bloomington. We quote, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.25 to $14.50
Southern, No. 2 Foundry	13.75 to 14.00
Southern, No. 3 Foundry	13.25 to 13.50
No. 1 Soft	14.25 to 14.50
No. 2 Soft	13.75 to 14.00
Gray Forge	12.50 to 12.75

Bars.—Some of the principal mills are continuing to turn away business when deliveries are wanted under six to eight weeks. Trade in Bars is also decidedly active among jobbers. Traveling salesmen's reports indicate favorable spring business and it is said that orders for larger tonnage than usual are being secured.

The week brought forward an active demand for Sheets and Hoops. Mills report than January business for Steel of all kinds aggregated a remarkable tonnage. It is possible to get Plates with promptness, the demand not being up to mill capacities. No. 14 Plate is quoted at 1.60c., St. Louis. Mill prices for both Iron and Steel in heavy tonnage are 1.45c. to 1.50c., half extras, East St. Louis. Jobbers' prices on less than carloads are 1.75c. to 2c., full extras.

Rails and Track Supplies.—Roads are urging prompt shipments of Standard Rails. As much business is usually crowded into the next four months it is feared that a scarcity of Rails will exist and track betterments be delayed thereby. Trade is brisk in Track Supplies, much buying being done for summer requirements. We quote Splice Bars, 1.50c. to 2c.; Bolts, with Square Nuts, 2.20c. to 2.30c.; with Hexagon Nuts, 2.30c. to 2.40c.; Spikes, 1.65c. to 1.75c.

Pig Lead.—Somewhat better action. Reported that about 20 cars of Chemical have been sold at 4.17½c. We quote Common Missouri, 4.15c.; Desilverized, 4.32½c. Lead Ore sold at $45 per ton.

Spelter.—Weaker in price and demand limited. Quote 3.77½c. Smelters say they have enough Ore on hand and purchased for a month's run. Ore prices advanced 50c. Top price obtained was $27.50 per ton.

Birmingham.

BIRMINGHAM, ALA., February 4, 1901.

What was said last week of the market about fits its condition this week. There is plenty of inquiry, but as stated last week the actual transactions are not what the inquiries lead one to anticipate. Even with our local buyers, whose stock is nominal, there is a holding back to await developments. And this is the case with many buyers outside the district. In the meantime there are cases where buyers are compelled to replenish some gaps in their stock piles. These are buying for prompt delivery and accompanying their orders is the request to hurry shipments. So that while there is sufficient doing to keep the market from rusting there is no snap and no activity in it. There was one sale of 500 tons of No. 1 Foundry at $12.25 on one order. No. 2 Foundry sold at $10.75 and some at $11. There are reports of sales at $10.50, but no one will father that child. No. 3 Foundry by parity of grades ought to be $10.25. It can probably be had at $10. There were fair sales of Gray Forge at $9.50 and fair sales at $9. The latter is given as inside price for the past week. No. 2 Soft sold in a limited way at $11. That grade is scarce, and for some weeks $11.25 is the "open sesame" to secure it. These prices indicate the irregularity that prevails in the market. The inclination among sellers is to feed the demand, but not to open full rations, except where full prices are obtained. The reports of sales agents continue to be enthusiastic concerning the buying movement that has been expected to set in. It does seem reasonable to expect it. When it matures there will be an active movement. But the confidence that begets it will not develop until our Northern competitors mark up prices. Relatively they are lower than we are, and any further decline here will be firmly contested by sellers. There was shipped the past week from New Orleans 3500 tons for account of export trade. But it was old business. There has been no new export business for some time, and there is not likely to be for some time to come. The demand for Steel continues good, and the Steel mill could place every ton of its outfit if it was working to full capacity. As it is, each furnace output has been increased from 32 tons for each heat to 54 tons. Changes prompted by experience are being made, and in a short time the full battery of ten furnaces will be in commission. Excerpts from what was published here last week as the annual report of the Tennessee Company were incorporated in last week's letter. It was a natural supposition to credit the publication with the favor of advanced sheets, as it was published as original matter—no credit being given the source of information—it was supposed to be by authority. The officials repudiate it, and say the report will not be published until after the submission next month to the stockholders at their annual meeting. What was published came from a fertile imagination that wanted quick action and assumed what the report would be. As evidence of the efficiency being attained in our furnace practice here, the following is submitted as the results from stacks of two furnace interests:

Grade.	Tons.	Tons.	Tons.	Tons.	Tons.
No. 1 Foundry	11	16	16	13	...
No. 2 Foundry	123	114	90	116	110
No. 3 Foundry	12	32	5	9	29
No. 1 Soft	32	...	25	21	33
No. 2 Soft	42	34	42	22	24
Totals	220	196	178	181	196

These results show the quality of Iron that is being made. The furnaces are supposed to be 200 tons each in output. In an 18-foot bosh furnace the output of Chilled Basic Iron was 212, 197 and 196 tons. These results are looked upon here as very favorable evidence of the efficiency of furnace workings.

A very important deal to this locality was closed the past week, when the Southern Railroad secured control of the Mobile & Ohio Railroad. This deal secures an entrance here to the Mobile & Ohio Road without any expenditure of money to obtain it. It will make the port of Mobile the Southern terminus of the Southern Railroad system, and the latter will be a potential factor in developing the trade of that port. It makes the Southern Road a more powerful rival of the L. & N. R. R. for the control of the tonnage of the district. Neither of them can now dictate. But the competition that is assured will give us the most efficient railroad service that the great facilities of these powerful interests can afford. We may confidently look for great activity in railroad matters. It is a well known fact that in this district every engine and every car available for service has been utilized without supplying the necessary means to promptly move the offered tonnage. Months ago these letters stated that output of material was increasing beyond facilities to promptly move it. New engines and new cars have been and are being provided, but the gap between supply and demand still exists, and it will be some time before it is closed.

Another Coal company have entered the field and leased 2700 acres of Coal lands in Tuscaloosa County on a royalty for two years, with the privilege of purchase within that time. Everywhere within the district activity in Coal continues unabated. The West Alabama Coal Company, who are a combination of several interests, lately made a contract with New Orleans parties for delivery of 150,000 tons for next season. The Sloss-Sheffield Company contracted last week for 125,000 tons of Coke, delivery this year, to their North Alabama furnaces. In all parts of the district the march of progress is uninterrupted. There is faith abounding, and it is shown in works.

Cincinnati. (*By Telegraph.*)

Office of *The Iron Age*, Fifth and Main streets,
CINCINNATI, February 6, 1901.

After the uncertainty and discrepancy of the past few weeks the atmosphere seems to have cleared somewhat, and while the basis of trading is admittedly lower than it was, yet a decidedly steadier feeling prevails. Forge Irons are still the weak spot, and have been selling very slowly at prices said to have been ranging as low as $8.60, Birmingham. It is still claimed that there is Iron to be had at 25c. below the minimum figures given herewith, and there are sellers who still say they have no Iron to offer at less than the maximum, but it is fairly safe to estimate values on the basis of the minimum rather than the maximum. There has been a moderate amount of Iron sold. No large lots in this territory but a fair tonnage made up of driblets. The outlook is for a quiet period. Freight rate from Birmingham is $2.75 to this point; from Hanging Rock district, $1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$14.00 to $14.25
Southern Coke, No. 2	13.25 to 13.50
Southern Coke, No. 3	12.50 to 13.00
Southern Coke, No. 4	12.00 to 12.25
Southern Coke, No. 1 Soft	14.00 to 14.25
Southern Coke, No. 2 Soft	13.25 to 13.50
Southern Coke, Gray Forge	11.75 to 12.00
Southern Coke, Mottled	11.75 to 12.00

Ohio Silvery, No. 1	17.00 to 17.50
Ohio Silvery, No. 2	16.00 to 16.50
Lake Superior Coke, No. 1	15.25 to 15.75
Lake Superior Coke, No. 2	14.25 to 14.75
Lake Superior Coke, No. 3	13.25 to 13.75
Southern Basic	13.75 to 14.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades	$18.75 to $19.75
Standard Southern Car Wheel, No. 2	17.75 to 18.75
Lake Superior Car Wheel and Malleable	19.00 to 20.00

Old Material.—There is but little, if any, change in the Scrap market, and prices remain about the same. Dealers' buying prices per gross ton are, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $15; Cast Railroad and Machinery Scrap, $11; Old Iron Axles, $16.75; Iron Rails, $18; Steel Rails, rolling mill lengths, $13; short lengths, $12; Car Wheels, $15.

The sales offices of the Carnegie Steel Company, W. H. D. Totten, Jr., sales agent, have been removed to 1016, 1017 Union Trust Building, Fourth and Walnut streets.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, February 6, 1901.

(By Telegraph.)

Pig Iron.—The Pig Iron market is quiet. There has been very little done in Bessemer Iron since the Carnegie purchases, probably not more than 5000 to 6000 tons all told having been sold. The furnaces have not fixed a definite price on Bessemer Iron, and will not do so until they have some inquiries before them. The price of Bessemer Pig is about $12.75 at Valley furnace, equal to $13.50, Pittsburgh. It is expected the Ore interests will announce the price of Ore for this year some time this month, and $4.50 a ton for Standard Bessemers is the generally accepted price. Forge and Foundry Iron are quiet and very little of either has been sold in this market for some little time. We quote Bessemer at $12.75, Valley furnace, or $13.50, Pittsburgh. Gray Forge is $13 and No. 2 Foundry is $14 to $14.25, but this could probably be shaded on firm offers. We note a sale of 2500 tons of Bessemer Iron at $12.75 at furnace, one of 500 tons at the same price, and a sale of 1000 tons of Standard Forge Iron at $12.25, Valley furnace, or $13, Pittsburgh.

Billets.—The Billet pool is to meet in New York tomorrow, Thursday, and persistent reports are that the price will be advanced either $1 or $2 a ton. There is a very active demand for Billets, and as high as 50c. a ton advance over pool price has been paid for prompt deliveries. We quote Bessemer Billets, Pittsburgh, Wheeling and the Valleys, at $19.75, delivered. Billets smaller than 3⅞ inches are $1 extra. Carbons higher than 0.21 and up to 0.60 are $1 extra; 0.61 up to 1 are $2 extra. Basic Open Hearth Steel, $1 a ton extra over the price of Bessemer. For cutting small Billets, 50c. per ton extra.

Sheet and Tin Bars.—The active condition of the Sheet and Tin Plates trades causes a very heavy demand for Sheet and Tin Bars, and some of the Sheet mills are having trouble in getting deliveries of Bars as fast as needed. The market is very strong, and several of the smaller Sheet mills that contracted for a six months supply some time ago are paying a slight advance over the regular pool price. We quote Sheet and Tin Bars at $20.75, delivered, Pittsburgh, Wheeling and Valley districts. For cutting Sheet and Tin Bars, 50c. per ton extra.

Muck Bar.—The market is firm, and we quote Standard grades at $24.50 to $25, Pittsburgh.

Steel Bars.—The market on Steel Bars seems to be firmer than it was a week or ten days ago, and $1.25 at mill seems to be the minimum price quoted by the leading mills.

Coke.—The Coke trade is very active, and fully 90 per cent. of the ovens in the Connellsville region are active, and at least 95 per cent. of the entire output is under contract. Prices on Coke are strong and may advance before long. Reports that wages of Coke workers were to be reduced is untrue, as the leading Coke interests do not contemplate anything of this kind.

(By Mail.)

It is persistently reported here to-day in Iron trade circles that Andrew Carnegie has sold out his entire holdings in the Carnegie Steel Company to the Morgan-Rockefeller interests. The report has not been officially confirmed, but it is believed to be true. It is certain that important deals in the Steel trade have been under way for some weeks. C. M. Schwab, president of the Carnegie Steel Company, has spent most of his time in the past three weeks in New York, in consultation with Andrew Carnegie. If this report is true it means that no tube mill will be built at Conneaut, and that a close alliance will be formed between Carnegie Steel Company, Federal Steel Company, American Steel & Wire Company and National Tube Company, Morgan and Rockefeller being large holders of stock in the last three named concerns. It is probable the Ore price this year will be put at $4.50 a ton. There was some talk of $4.25, but this has been given up, and it is generally accepted that $4.50 will be the price. Nothing of special interest has developed in the Iron trade in the past week. There is a moderate volume of business in Finished Material, a little larger than in January, but not large enough to take the output of the mills at the rate they are producing material. In fact, were it not for old contracts some of the leading mills would be after tonnage very aggressively.

Ferromanganese.—We quote 80 per cent. domestic at $62.50, delivered buyer's mill.

Bars.—There is a moderate volume of tonnage in Steel Bars, and some of the leading mills are filled up for the next two or three months, and holding firm at 1.25c., at mill. In Iron Bars there is nothing of interest to note. The volume of tonnage is only fair, and prices are firm. We quote at 1.30c. at mill, equal to 1.34½c., Pittsburgh, in carloads.

Sheets.—The Sheet trade continues very active, and round lots of Sheets have been sold for delivery in second quarter on the basis of 2.87½c. for No. 27, and 2.97½c. for No. 28. The Sheet mills are all well filled up with tonnage and the market is firm. We quote No. 27 Black Sheets at 2.85c. to 2.90c.; No. 28, 2.95c. to 3c., and note that some mills are holding firm for the higher prices. We quote Galvanized Sheets at 70, 10 and 5 per cent. at mill, in carload lots. In exceptional cases, and for very desirable tonnage, 75 per cent. off at mill for Galvanized is being done.

Structural Material.—Some large local jobs are being given out. The Frick office building on Grant street, and the Henry W. Oliver office building on Smithfield street, have both been placed, each calling for from 5000 to 6000 tons of material, and both going to Carnegie Steel Company. The new Tin Plate building of Sharon Tin Plate Company, at Sharon, Pa., was taken by McClintic-Marshall Construction Company and calls for a fair tonnage. Some other large work is being figured on for other cities. The American Bridge Company have recently taken some very large contracts calling for 30,000 to 40,000 tons. We quote: Beams and Channels, up to 15-inch, 1.50c.; over 15-inch, 1.60c.; Angles, 3 to 6 inches, inclusive, 1.40c.; over 6 inches, 1.50c.; under 3 inches, 1.25c.; Zees, 1.50c.; Tees, 1.55c.; Steel Bars, 1.25c. to 1.35c., half extras, at mill; Universal and Sheared Plates, 1.40c., all f.o.b. Pittsburgh.

Plates.—There is a fair demand for Plates, but not as heavy as some time ago. It is thought, however, the tonnage this month will be larger than in January. The leading mills are crowded with old contracts, some of them at low prices, and cannot make deliveries as fast as wanted. It is not anticipated there will be any change in price of Plates for some time. Association prices are as follows: Tank quality, ¼-inch and heavier, 1.40c.; 3-16-inch, 1.45c.; under 3-16-inch and above No. 10, 1.50c.; Flange or Boiler Steel, 0.1c. advance over base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel, 0.3c. advance over Tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

Merchant Steel.—Demand is light and orders are mostly for small lots. For Tool Steel we are advised

there is quite a good demand. It is thought tonnage will materially improve this month. We quote: Plow Slabs, ¼-inch and heavier, at 1.60c., base; Tire Steel, 1.35c. to 1.40c.; Toe Calk, 1.70c. to 1.75c.; Open Hearth Machinery, 2c., base; Open Hearth Spring, 2c., base; Hammered Lay Steel, 3c. to 3.25c.; Rolled Lay Steel, 2.75c. to 3c.; Cold Rolled and Cold Drawn Shafting, 55 per cent. off in carload lots; 50 per cent. in less than carload lots, delivered in base territory. Tool Steel, 7c. and upward, according to quality. On Tool Steel freight is allowed east of the Mississippi River. It is probable that on firm offers and for good orders the above prices, except on Shafting and Tool Steel, would be shaded.

Steel Rails.—A meeting of the Rail pool is to be held this week, and the report is revived that prices may be advanced $1 or $2 a ton. Nothing official about this has been given out. We quote at $26, at mill, for standard sections.

Skelp.—Several of the Skelp mills report demand a little better. Prices, however, are not as strong as they were some time since. We quote Grooved Iron Skelp at 1.45c. to 1.50c., and Sheared at 1.50c. to 1.55c. We quote Grooved and Sheared Steel Skelp at 1.30c. to 1.35c., all f.o.b. Pittsburgh; terms, four months or 2 per cent. off for cash 30 days.

Tubular Goods.—Tonnage in January was fair, but is expected to be larger this month. Large consignments of Oil Well goods continue to be made to the new oil fields in Southeastern Texas. Prices to consumers in carload lots are as follows:

Merchant Pipe.

	Per cent. Black.	Per cent. Galvd.
⅛ to ½ inch and 11 to 12 inch	61	48
¾ to 10 inch	68½	56

Casing, Random Lengths.

	S. & S.	I. J.
2 to 3 inch	58	53½
3½ to 4 inch	63	59
4½ to 12½ inch	65	61½

Casing, Cut Lengths.

	S. & S.	I. J.
2 to 3 inch	53½	49
3½ to 4 inch	59	55
4½ to 12½ inch	61½	57½

Boiler Tubes.

	Up to 22 feet. Per cent.
Steel.	
1 inch to 1¾ inch and 2¾ inch to 5 inch, inclusive	68½
2 inch to 2½ inch, inclusive	63
6 inch and larger	62
Iron.	
1 inch to 1½ inch and 2½ inch	49½
1¾ inch to 2¼ inch	45
2¾ inch to 13 inch	57

Jobbers are quoted 5 per cent. or more lower than the above prices.

Coke.—Output of Coke in the Connellsville region last week was 201,167 tons, the largest product of any one week for some months. Of the 20,997 ovens in the region, 17,491 were active and 3506 idle. We continue to quote strictly Connellsville Furnace Coke at $1.75 a ton at oven, but in exceptional cases this has been slightly shaded. Connellsville 72-hour Foundry Coke is held at $2.25 a ton at oven. Main Line brands of Furnace Coke are offered at $1.50 to $1.65, and Foundry at $1.75 to $2.

Iron and Steel Scrap.—There is very little doing, hardly enough material being sold to fix prices. We make nominal quotations as follows: No. 1 Railroad Wrought Scrap, $14.50 net ton, f.o.b. Pittsburgh; Old Iron Rails, $18.50 to $19, Pittsburgh, and $19.50, Valley, gross ton; Old Steel Rails, $14 to $14.50 gross ton; Busheling Scrap, $12 gross ton; Turnings $7 net ton; Cast Iron Borings, $6 net ton; Old Horseshoes, $13 gross ton; Heavy Melting Stock, $13 to $13.50 gross ton.

S. Fischer Miller, contracting engineer of the American Bridge Company, has established his office at 7 West Twenty-second street, New York. Rooms for downtown appointments will, however, be maintained until May 1. After then a suitable downtown office will be arranged for, probably in the same building, 100 Broadway, as the executive offices of the company.

W. E. Reis, president of the National Steel Company, and C. S. Guthrie, president of the American Steel Hoop Company, are in the South.

Cleveland.

CLEVELAND, OHIO, February 5, 1901.

Iron Ore.—With the settlement of the question of Ore prices for the coming year as far away as ever, Iron men have commenced to inquire the reason for the delay and have found an answer to their liking. It is now commonly reported that the reason for the failure to fix prices is a disagreement between the Mesaba and old range producers as to the exact differential between these Ores. Last year the Bessemer grade received $1 and an attempt is to be made this year to alter that to some extent. Old range operators are holding out for a stiff price, while the independent producers in the Mesaba range are asking that lower prices be demanded. that they may have an equal opportunity on the market with all other producers, seeing so many of their fellow operators on the Mesaba range own their furnaces.

Pig Iron.—Recent transactions in the Bessemer Iron market have stiffened matters greatly and have resulted in a brisk demand for that product. Inquiries have been heavy this week, with but little material placed. Buyers are offering $12.50, with producers demanding $13, and with a compromise on $12.75 being talked and possible. Basic Iron is quoted at the old figures, although but little business has been done owing to the uncertainty as to deliveries and the lack of a very sharp demand for the product. Basic is quoted at $13.50 and Off Basic at $12, although better figures are generally demanded but not paid. Foundry Nos. 1 and 2 are bringing $14 and $13.50, respectively, at the furnace, with but little talk of changing prices until the conditions shall dictate others. Sales of this grade continue to be small in quantity, although in large numbers.

Finished Material.—This week has seen a slight decline in Bars, all mills now quoting 1.25c., Pittsburgh, whereas some of the larger mills have been holding out heretofore for 1.35c. No sales have been reported yet at the new figure, although it is expected that heavy sales will be made before the week ends. This is expected to cause a brace in the market on this grade of Steel. Next in interest are the transactions in Structural Steel. One inquiry alone this week amounted to 20,000 tons, but this order has not been placed, but is expected to be in a short time. The main interest appears to center in bridge building, although the prospective business blocks are demanding their share of attention. The Plate market is active, but with widely differing conditions as to deliveries. Some of the larger mills are unable to promise deliveries short of six or eight months, while others are still able to give them within ten days to two weeks. The sales of Plate have been satisfactory, bridge work and Ship Plate predominating. The American Ship Building Company continue an interesting, not to say important, factor in this market. Steel Rails are still being sold in considerable quantities, although the tonnage has not been up to recent standard this week. Lines in this territory are pretty well stocked up as to their immediate needs. Some of them began to provide against the future when the talk of an advance was abroad, but since that has passed away the business has returned to normal conditions. Electric lines are being generally projected through the northern section of Ohio and the industry is creating an enormous demand for the product. Billets are fairly active, with prices still holding at $19.75, Pittsburgh. While the story that a new Steel mill is to be started at Norwalk is not generally credited as yet, belief that there is honest intent behind the report is gaining ground. The backers have not been officially named, although rumor establishes the fact that the money comes from persons who sold out their plants to some of the big Steel companies when industrial combinations were being formed. Another report has it that a new Steel mill is shortly to be started at Zanesville also, this one being akin to that at Norwalk.

Old Iron.—A change in conditions in the Scrap market is generally expected. Dealers have plenty of material offered them now, more, in fact, than they have had for weeks, and are able to buy at reduced prices. The demands are larger than they have been, sales being

numerous and tonnage satisfactory. Those who have any quantity ahead are holding back, hoping for the decline in prices which seems imminent. The quotations have not changed so far. They are: No. 1 Wrought, $15, net; Cast Scrap, $13, net; Stove Plate, $10, net; Old Car Wheels, $17.50, gross; Cast Iron Borings, $5.75; Heavy Steel, $13.50.

New York.

Office of *The Iron Age*, 232-238 William street, New York, February 6, 1901.

Pig Iron.—The market has been very quiet during the past week, and buyers are evidently purchasing only from hand to mouth. Pig Iron made by the Dominion furnace at Sydney, C. B., is being offered in this market, the first furnace having just blown in. Isolated inquiries are being received from abroad, but business is out of the question. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16.50 to $17.50; No. 2 X, $15 to $16; No. 2 Plain, $14 to $14.50; Gray Forge, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $15 to $15.25; No. 2 Foundry, $14.25 to $14.50; No. 1 Soft, $15 to $15.25; No. 2 Soft, $14.25 to $14.50; No. 3 Foundry, $13.50 to $14; No. 4 Foundry, $13 to $13.25; Gray Forge, $12.75 to $13.

Cast Iron Pipe.—No large transactions are reported in this district. It is stated, however, that the Cincinnati business has been taken by an Eastern shop, who will also take care of the pumping engines. Competition between the consolidation and the outside shops continues keen. We quote $24 per gross ton for 8-inch Pipe, at tidewater.

Steel Rails.—We do not hear of any sales of consequence, either for the domestic or the foreign markets. We quote $26 for Standard Sections, and $32 to $32.50 for Girder Rails. We quote Spikes, 1.50c. to 1.60c.; Splice Bars, 1.25c. to 1.30c.; Square Track Bolts, 2.05c. to 2.10c., and Hexagon Bolts, 2.15c. to 2.20c., at mill.

Finished Iron and Steel.—Business has been rather quiet. It is reported that the Plate mills will hold a meeting in this city toward the end of the week. We quote as follows at tidewater: Beams, Channels and Zees, 1.65c. to 1.70c.; Angles, 1.30c. to 1.40c.; Tees, 1.65c. to 1.75c.; Angles, 1.30c. to 1.40c.; Tees, 1.65c. to 1.75c.; Bulb Angles and Deck Beams, 1.90c. to 2c.; Universal Plate Mills, 1.58c. to 1.60c.; Sheared Steel Plates are 1.58c. to 1.60c. for Tank, 1.68c. to 1.70c. for Flange, 1.78c. to 1.90c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange and 3.25c. for Fire Box. Refined Bars are 1.40c. to 1.45c.; Common Bars, 1.30c. to 1.35c.; Soft Steel Bars, 1.35c. to 1.40c., and Hoops, 1.90c. to 2c., base, on dock.

Metal Market.

Office of *The Iron Age*, 232-238 William street, New York, February 6, 1901.

Pig Tin.—A little more business has been transacted since our last writing than has been in evidence for some weeks, but nevertheless the tone of the market has not improved, and prices are not very firm. The market to-day closed 26.35c. to 26.50c. for spot, 26.20c. to 26.30c. for February and 26c. to 26.25c. for March. There are large stocks here and heavy quantities are afloat. The London Market closed to-day £122 15s. for spot and £117 15s. for futures. It will be seen that a discount of £5 on futures still exists.

Copper.—After the sales which we reported last week the market became quiet, transactions of small lots only being reported. There is, however, a tendency toward firmness, and offers which were not taken up a week ago cannot be obtained to-day. The cheap metal has evidently been pretty well disposed of, and now the large interests who have been holding out for the higher prices are in command of the situation. The official prices of 17c. for Lake and 16⅝c. for Electrolytic and Casting are still adhered to by the principal interests and they now represent the market more truly than they have for some time past. There is, however, still a little talk of straggling lots of Lake to be had at 16⅞c., and in some quarters it is stated that Electrolytic is to be had for 16.35c. to 16.50c. A fair market quotation for Lake is 16⅞c. to 17c., and for Electrolytic 16½c. is doubtless an acceptable figure. The London market is very quiet, but prices have advanced a shade during the week. Spot is quoted £71 6s. 3d., and three months' futures were quoted to-day £71 16s. 3d. Best Selected has declined 5 shillings and is quoted to-day £78.

Pig Lead.—No change is to be noted in this market. Business is still dull, and the American Smelting & Refining Company continue to quote 4.37½c. for lots of 50 tons and more, f.o.b. New York, and 4.32½c. St. Louis. The London market is unchanged, to-day's closing price being £15 7s. 6d.

Spelter—Has further declined, and is very weak at the lower prices. There is scarcely any business and absolutely no speculative buying. Spot to March is quoted 3.95c. to 4c., while shipments from the West are offered at 3.97½c. The St. Louis market is down to 3.75c. London has declined another 2 shillings and 6 pence, and is quoted to-day £18.

Antimony.—There is no change. Hallett's is quoted 9¼c. and Cookson's 10¼c. Prices named for other brands are 8¾c. to 9c.

Nickel.—The situation is unchanged, the metal being scarce at 55c. to 60c. for ton lots.

Quicksilver—Has not been changed, prices quoted here remaining $51 per flask of 76½ lbs., in lots of 50 flasks or more. The London market is unchanged at £9 2s. 6d.

Tin Plate.—A fair business is reported from jobbers. They are ordering more freely than their actual requirements, but are not yet anticipating the heavy spring trade. Their stocks are not heavy, and it is expected that next month there will be a scramble for delivery. The American Tin Plate Company are quoting on a basis of $4.19 per box of standard 100-lb. Cokes, f.o.b. New York, and $4, f.o.b. mill. These prices have been named to hold until June 1.

Iron and Industrial Stocks.

All other considerations have been swept out of view by the announcement that negotiations between Andrew Carnegie and J. P. Morgan and his associates had reached the point where a successful termination is in sight. Transactions which were of moderate volume in the earlier days of the week under review developed enormous proportions on Tuesday and to-day, the sales of Federal Steel common having been 72,300 on the former and 96,800 shares on the latter day, while during the first three days of the week National common totaled up over 100,000 shares and National Tube common attained 45,000 shares. Large advances took place in some of the stocks more directly affected, and the whole list was active at rising prices.

	Bid.	Asked.
American Bicycle Company, common	6	6½
American Bicycle Company, preferred	25	26
American Bicycle Company, bonds	72½	73
American Bridge Company, common	43	43½
American Bridge Company, preferred	91½	91¾
American Sheet Steel, common	21	24
American Sheet Steel, preferred	77¼	74¾
E. W. Bliss, common	..	137½
E. W. Bliss, preferred	125	..
Cramp's Shipyard stock	81	83
Crucible Steel Company, common	24¼	25
Crucible Steel Company, preferred	79	80
Diamond State Steel	3½	3⅝
Dominion Iron & Steel Company	22½	24⅝
Empire Iron & Steel, common	6	10
Empire Iron & Steel, preferred	39	45
National Enam. & St., common	18	21
National Enam. & St., preferred	80	82
New Haven	6	6⅛
Otis Elevator, common	29	30
Otis Elevator, preferred	91	92
Pratt & Whitney, common	3½	5
Pratt & Whitney, preferred	45	55
Tidewater Steel	6½	6⅝
U. S. Cast Iron Pipe Company, common	4½	5
U. S. Cast Iron Pipe Company, preferred	31	34
U. S. Projectile	110	..
Va. C. I. & C., stock	3½	4½
Va. C. I. & C., bonds	30	35
H. R. Worthington, preferred	112	115

The stock of the National Fire Proofing Company of Pittsburgh was listed on the Pittsburgh Stock Exchange last week. The company were incorporated in 1889 and have an authorized capital of $1,900,000 common stock

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING FEBRUARY 6, 1901.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Sales.
$29,000,000	Am. Car & Foundry, Common	21½-21¾	21⅝-22	.....	22 -23	22½-23	22⅛-23	11,100
29,000,000	Am. Car & F'ndry, Pref. (7 % Non-Cu.)	69⅛-69½	69⅞-70⅜	.....	70½-71¼	71 -71¾	71½-72⅛	4,600
19,000,000	Am. Steel Hoop, Common	26¾-27½	26¾-28½	.....	28½-30⅜	30 -30⅞	31 -32⅛	30,500
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.)	-71¼	72½-74	.....	73½-75	74 -76	76¾-77	2,600
50,000,000	Am. S. & W., Common	43⅜-44¾	44 -46⅛	.....	46 -47¾	47 -49⅛	50 -52⅛	342,400
40,000,000	Am. S. & W., Pref. (7 % Cu.)	86¾-88¼	-88½	.....	89 -91	90¾-93½	92⅞-95	22,600
28,000,000	Am. Tin Plate, Common, N. Y.	57 -57¾	56⅞-58⅛	.....	58½-59⅞	59⅞-60½	60 -60⅞	20,400
18,325,000	Am. Tin Plate, Pref., N. Y. (7 % Cu.)	-88	.....	.....	-88	-90	90 -91½	4,200
7,500,000	Bethlehem Iron†	60½-61	60⅜-61	.....	60⅜-61	61 -61½	-60¾	1,357
15,000,000	Bethlehem Steel, par $50, $1 paid in	.....	-18	.....	-19	18½-19	-19	753
7,974,550	Cambria Iron, Philadelphia*	-45¼	.....	.....	.....	.....	-46	106
16,000,000	Cambria Steel**	17 -17⅛	16⅝-17¼	.....	17 -17¾	17⅝-17⅞	18 -18½	7,395
11,000,000	Colorado Fuel & Iron	45¾-46¾	46¼-48¼	.....	47½-49	47¾-48½	49⅛-51	30,100
46,484,300	Federal Steel, Common	43⅜-44⅞	43⅞-46	.....	45¾-47¼	47 -51⅝	51¾-54⅜	244,000
53,253,500	Federal Steel, Pref. (6 % Non-Cu.)	71 -72½	72⅞-74	.....	74½-75⅜	75¾-77¾	79 -82	74,900
32,000,000	National Steel, Common, N. Y.	39⅞-40½	40⅛-41¾	.....	41¾-45¼	45 -46¾	47 -49	115,600
27,000,000	National Steel, Pref., N. Y. (7 % Cu.)	-91½	-91½	.....	91⅝-93	-93	94 -95	4,200
40,000,000	National Tube, Common, N. Y.	58⅞-59	58¾-61	.....	62 64¾	65 -67¼	67¼-70⅛	52,374
40,000,000	National Tube, Pref., N. Y. (7 % Cu.)	99 -99¼	-99	.....	99¾-100	102-103½	103½-104½	8,100
5,000,000	Penna., Common, Philadelphia	-65	.....	.....	66 -73	73 -75	-73	308
1,500,000	Penna., Pref., Philadelphia	.....	.....	.....	.....	.....	91 -95	10
12,500,000	Pressed Steel, Common	38 -39	37½-39¼	.....	37¾-39⅜	37½-38⅞	39 -39⅜	8,300
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)	79½-79⅝	78¾-79⅞	.....	76½-77⅛	75⅞-77	76½-77½	2,500
27,191,000	Republic Iron & Steel, Common	13¾-14	13⅜-15¼	.....	15 -15⅝	15¼-15⅞	16¼-17¼	16,100
20,306,900	Repub. Iron & Steel, Pref (7 % Cu.)	-59	58 -59¼	.....	59⅝-60⅜	60 -60¼	62½-64½	7,750
7,500,000	Sloss-Sheffield S. & I., Common	-20	.....	.....	-20	19½-19¾	20½-21	900
6,700,000	Sloss-Sheffield S. & I., Pref. (7 % Non-Cu.)	67½-68	.....	.....	67¾-68	.....	68½-69	1,200
20,000,000	Tennessee Coal & Iron	58¼-59	59 -62¾	.....	62¼-65½	65 -67¾	66 -67¾	49,300
1,500,000	Warwick Iron & Steel (par $10)	.....	- 7⅝	.....	.....	- 7⅝	.....	110
15,000,000	International Pump, Common	.....	.....	.....	-25½	26¼-28⅜	28 -28½	2,900
12,500,000	International Pump, Preferred	.....	-75½	.....	75½-76¼	-76¼	76¼-76¾	2,800
11,000,000	International Silver	- 7	7⅛- 7¼	.....	7⅛- 7½	7⅜- 7	- 7½	2,100

* Par $50. ** $10.50 per share paid in. † 6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

Bonded indebtedness: Am. S. & W., $130,656; Am. Tin.Plate, none; Am. Steel Hoop, none; Cambria Iron Co., $2,000,000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., $9,822,000 Illinois 5 %, $7,417,000 E. J. E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel, $2,561,000 6 %; National Tube, none; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 5 %, Steelton, 1st, 1917. $2,000,000 5 %; Sparrow's Point, 1st. 1922, $4,000,000, consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co.; Col. Fuel Co. Gen. Mort. 6 % $880,000, Col. Coal & Iron Con. Mort. 6 % $2,810,000, Col. Fuel & Iron Gen. Mort. 5 % $2,303,000. Also outstanding $2,000,000 preferred stock on which dividends have been paid to June 30, 1900. Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6 %, $2,000,000, Sloss I. & S. general mortgage 4½ % $1,835,000.

and $1,000,000 preferred, of the par value of $50 a share. Capital outstanding, $623,550 preferred stock and $500,000 common, all of which is full paid. The company have no debt and pay 1¾ per cent. quarterly dividend on the preferred stock. The officers are D. F. Henry, president; T. J. Hamilton, vice-president; W. H. Graham, treasurer, and W. D. Henry, secretary.

The directors of the Marting Iron & Steel Company, at Ironton, Ohio, have declared a 50 per cent. semiannual dividend.

Chicago reports indicate that the Shelby Steel Tube Company will pass the dividend on its preferred stock.

American Car & Foundry Company.—The American Car & Foundry Company report for the seven months ended November 30, 1900:

Net earnings for seven months ending November 30, 1900		$2,547,227
Dividends on preferred capital stock:		
1¾ per cent. on $20,090,000 paid August 1, 1900	$509,075	
1¾ per cent. on $30,000,000 paid November 1, 1900	525,000	
1¾ per cent. on $30,000,000 paid February 1, 1901	525,000	
	$1,559,075	
Dividends on common capital stock:		
½ per cent. on $29,090,000 paid August 1, 1900	$145,450	
½ per cent. on $30,000,000 paid November 1, 1900	150,000	
½ per cent. on $30,000,000 paid February 1, 1901	150,000	
	$445,450	
		$2,004,525
Surplus		$542,702
Surplus April 30, 1900		3,698,649
Total surplus November 30, 1900		$4,241,351

The stockholders of the Westinghouse Electric & Mfg. Company of Pittsburgh are in receipt of applications for proxies to be used at the meeting of the stockholders in Pittsburgh on February 20, when the stock of the company will be increased. It is not stated the amount of increase proposed, but it is expected that the second preferred or assenting stock will be increased by $4,000,000, and that it will be offered to stockholders in proportion to holdings at par, or $50 a share.

Dividends.—The Ashton Valve Company have declared a regular quarterly dividend of 1½ per cent., payable February 15.

The Bethlehem Steel Company have declared a dividend of 50 cents per share, payable March 1 to stock of register February 15.

The American Radiator Company have declared the regular quarterly dividend of 1¾ per cent. on their preferred stock, payable February 15.

The Niles-Bement-Pond Company have declared a semiannual dividend of 3 per cent. on their common stock, payable in two quarterly installments March 10 and June 10. Books close ten days previous in each case. Also the regular quarterly dividend of 1½ per cent. on the preferred, payable February 20. Books close February 9 and reopen February 20.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street,
New York, February 6, 1901.

That there is an improvement in the tone of the machinery market is most evident among machine tool merchants. They report a good increase in sales and various propositions have come to the surface which forecast good future business. The scare which until a week ago was steadily growing has thus abated somewhat. That certain parties were becoming frightened is evinced by the efforts they have put forth to get business by cutting prices. From all sections have come numerous complaints of cutting, but it is hoped that present conditions will bring prices to a sounder basis.

At the annual meeting of the Niles-Bement-Pond Company, which was held yesterday, the entire list of officers were re-elected.

The list of tools which will be purchased for installation in the new machine shop which is being built at Elizabethport, N. J., by the Central Railroad of New Jersey has at last been submitted to the trade by George Hill of 150 Fifth avenue, New York. Considerable surprise is expressed in the trade that it is not much larger, as it was expected that this job would be one of the best offered in many a day. Whether it will be supplemented materially or not is not known. It is stated that a large number of tools will be removed from various other shops belonging to the railroad and placed in the

new shops in addition to the new tools which will be purchased. The present list calls for 42 tools and the items are numbered from 100 to 142. The list is as follows:

One 90-inch wheel lathe to swing 88 inches, fitted with journal turning attachment, complete with countershaft and wrenches. No quartering attachment.
One 2 x 24 flat turret lathe, furnished with automatic chuck and roller feed, turning tools, threading dies, countershaft and wrenches.
One 36-inch turret chucking lathe, furnished with facing attachment, necessary tools, countershaft and wrenches.
One 18-inch improved Fox lathe for brass work, with countershaft and wrenches.
One size I. Gisholdt turret lathe, complete with gears, drill holders, tools, taper attachment, countershaft and wrenches. Spindles to have 4-inch holes.
One 30-inch engine lathe, 12-foot bed furnished with Westcott four jawed scroll universal chuck, with countershaft and wrenches.
Two 18-inch engine lathes, 8-foot bed, fitted with Westcott four-jawed scroll universal chuck, with countershaft and wrenches.
Two 18-inch engine lathes, 8-foot bed, fitted with taper attachment, countershaft and wrenches.
One 24-inch engine lathe, 10-foot bed, fitted with Westcott four-jawed scroll universal chuck, with countershaft and wrenches.
One 24-inch engine lathe, 10-foot bed, fitted with taper attachment, countershaft and wrenches.
One horizontal boring machine, bar 5 inches in diameter, must drill to the center of 60 inches; main table, 8 feet long; spindle transverse, 48 inches, furnished complete with countershaft and wrenches.
One 39-inch boring mill, with countershaft and wrenches, with improved lowering and raising attachment of cross rail.
One slab milling machine for locomotive rods; table, 24 inches wide; 12-foot travel; must take work under a 10-inch cutter up to 18 inches, complete with countershaft and wrenches.
One vertical milling machine, distance from inside of frame to center of spindle, 32 inches; complete with countershaft and wrenches.
Two Bement & Miles 24-inch crank planers, furnished complete with countershaft and wrenches.
One 32 x 32 inch by 8-foot planer, complete with countershaft and wrenches.
One No. 3 Bickford radial drill, with tapping attachment, countershaft and wrenches.
Two 30-inch drill presses, with countershaft and necessary wrenches, fitted with Morse taper socket.
Three 40-inch drill presses, complete with Morse taper socket, countershaft and wrenches.
One rod drill for drilling side rods, with two entirely independent spindles having a capacity to drill to the center of 10 feet, with countershaft and wrenches.
One eight-spindle arch bar drill, complete with countershaft and wrenches.
One pipe threading machine, having a capacity of from ¼ inch to 2 inches, furnished complete with all necessary dies, cutting off attachment, countershaft and wrenches.
One Curtis pipe threading machine to cut from 2½-inch pipe to 8 inches. All right hand thread, with dies, cutting off attachment, countershaft and wrenches.
One 24-inch slotter, furnished complete with countershaft and necessary tools.
One driving wheel quartering machine, to quarter all cranks of driving wheel from 22 to 32 inches stroke, with a swing of 90 inches.
One Hartz flue welding and swedging machine.
One 54-inch throat single end punch; capacity, 1¼-inch holes in 1-inch plate, furnished with a full set of punches and dies.
One 54-inch throat single end shear, with two sets of shear plates.
One single end punch and shear to punch 3 inches in 1-inch plate and shear 3½ inch square iron cold.
One No. 6 bulldozer, complete.
One 3-inch heading and forging machine to take work up to 3 inches.
One eye bender, Manning, Maxwell & Moore's catalogue, page 490.
One 125-pound Bradley helve hammer.
One cold saw to cut 10 inches round or 20 inches I-beams, with countershaft and wrenches.
One 4000-pound steam hammer, double arch, die block to be removable from above the frame for pedestal; 48-inch stroke.
One 48-inch Gap pneumatic tank riveter to drive rivets up to ½ inch.
One 14-foot Gap pneumatic riveter to drive 1¼-inch rivets, with cast iron frame, tension bars, &c., complete.

The contract for the electric traveling cranes in connection with this work has been awarded to Manning, Maxwell & Moore. There will be about $50,000 worth of Shaw cranes, including one of 50 tons, another of 40 tons and one of 30 tons capacity.

The contract for the boilers was awarded to the Babcock & Wilcox Company. Two 250 horse-power water tube boilers are included in the order. The engines have not been given out as yet. The power transmission machinery also remains to be let.

A good sized lot of tools is now being purchased by the Sprague Electric Company of Watsessing, N. J. The machines are to supplant a large number which have been taken from the plant by the Otis Elevator Company. The Sprague Company, it will be recalled, went into the Otis Company about two years ago with their electric elevator business. Shortly after the transaction dissensions arose between the Sprague and Otis interests and the matter has just been settled. The machinery formerly used at Watsessing in the building of elevators has been taken to the Yonkers and other plants of the Otis Company and the Sprague Company are now buying to replace these tools. They will not be used in the building of elevators, however, but will be put on the regular line of electric work which has always been the principal product of the Sprague Company. It is said that the company intend entering the heavy generator business. The orders which have been placed thus far are for the smaller types of machine tools and among the recipients are numbered most of the important merchants and builders. The Brown & Sharpe Mfg. Company received orders for nine millers and grinders. The large tools have not been placed as yet.

The Hibbard, Rodman & Ely Safe Company of Plainfield, N. J., are now buying the tail end of a nice equipment. The tools will be used in building special machinery which is to be utilized in building the vaults which are to be the principal product of the Plainfield plant.

The United States Cast Iron Pipe & Foundry Company, whose headquarters are at Chicago, are shopping about for a number of tools. A representative of the company is in this city. The tools are to be scattered among the various plants controlled by the company.

We are informed that an extension to their plant is contemplated by the Skinner Chuck Company of New Britain, Conn. A large number of machine tools will be required in fitting up the shop, which is to be four stories in hight and about 300 feet long.

The Wheeling Mold & Foundry Company of Wheeling, W. Va., are looking about for equipment for an addition to their machine shop and a new foundry.

The Wilmington Button Company of Wilmington, Del., in which I. Dupont, the powder manufacturer, is said to be interested, are in the market for machinery including a power plant.

We learn that important improvements are under way by Sidney Shepard & Co. of Buffalo, N. Y. This concern are large manufacturers of sheet metal goods and it is reported that they intend removing their plant from Buffalo to a district which will allow for the expansion which is contemplated. James F. Foster is in charge of the work.

Manning, Maxwell & Moore announce that they have completed arrangements with Prentice Brothers of Worcester, whereby the latter concern will build for them a complete line of plain and universal grinding machines. The new line, it is said, will be most complete and modern in every respect, embodying all sizes and types. This matter has been in process of consummation for some time and we have alluded to it on previous occasions.

A representative of the trade who has just returned from Buffalo states that plans are well under way for the erection of the new tube works of Flagler & Post of Boston. A site has been purchased, and the positions for the buildings are being mapped out. Arrangements are being made for the purchase of the building materials and equipment. Harvey K. Flagler, who is the moving spirit in the new enterprise, is a brother to John Flagler, formerly of the National Tube Works, and was connected with him in the tube business at one time. H. T. Wise of Boston is also interested in the project.

Contracts have just been awarded to the Camden Iron Works of Camden, N. J., for four of the largest pumping engines ever built. The contract aggregates in value about $900,000. The work is for the municipality of Cincinnati, Ohio. The contract was obtained by Captain H. G. H. Tarr, who has for many years been prominent in the trade as chief of the water works department of Henry R. Worthington, which concern are now a branch of the International Steam Pump Company. This contract has been looked upon in the trade as the most important ever awarded. An interesting feature of the transaction is that the order went to Camden.

There is considerable dissension among Tammany officials regarding the awarding of the contract for the two 12,000,000-gallon plumping plants which are to be erected at Tenth avenue and Harlem River, New York City. As we have previously mentioned, the only bid received which is within the appropriation is for a direct acting plump, while a crank and fly wheel pump was specified. Some of the members are in favor of award-

ing the contract to the lowest bidder, while others hold that the type of pump specified is much more desirable and consider the installation of a direct acting pump a step backward. Another point which is raised by the warring factions is that the International Pump Company, who, by the way, are the lowest bidders, have put in two bids. It is also stated that Randolph Guggenheimer, President of the Municipal Council, is a stockholder in the International Company, while the city statutes provide that no municipal contract be awarded to a concern in which a city official is interested.

The Phœnix Iron Works, who formerly had an office in the Western Union Building, Chicago, have removed to 1409 Fisher Building. H. C. Mallory will represent them for the present. P. H. Carey, their former Chicago agent, has accepted a position with the Aultman-Taylor Company, Pittsburgh.

Information Wanted.—A correspondent wishes to know where he can obtain drafts or exact measurements for a full line of patterns for boiler castings complete.

PERSONAL.

F. E. Bachman, late manager of the Shenango Furnace Company, Sharpsville, Pa., has been appointed general superintendent of the furnaces of the Buffalo Union Furnace company, who operate the Buffalo Furnace Company, the Union Iron Works and the Buffalo Charcoal Iron Company.

Samuel S. Hartranft, formerly manager of the Buffalo Furnace Company, Buffalo, N. Y., has become superintendent of the Edith Furnace of the American Steel & Wire Company, at Allegheny, Pa.

William E. Dodge has given $100,000 to Columbia University, New York, for the construction of Earll Hall.

Charles E. Bowman, representative of Henry R. Worthington at Cleveland, has been appointed auditor of the post office at Cleveland.

Col. E. J. Baird, Jr., has resigned as manager of the blast furnaces of the Marting Iron & Steel Company, at Ironton, Ohio. Mr. Richards of Sarah Furnace, at Ironton, is looking after these furnaces temporarily. It is probable that D. F. Fowler, now employed by Corrigan, McKinney & Co. of Cleveland, will be appointed general superintendent of the Marting Iron & Steel Company.

The many friends in the country of Arthur Windsor Richards will be pleased to learn that he has been appointed manager of the Cleveland Steel Works, at South Bank, of Bolckow, Vaughan & Co., Limited, including the engineering departments.

L. G. Laureau, one of the special commissioners in the group of mines and metallurgy at the Paris Exhibition, has returned to this country to resume his practice as consulting expert.

R. H. Hood of the R. H. Hood Company, New York, sailed recently for Europe. He intends to make an extensive tour around the world, which from present plans will take about three or four years.

Joseph F. Moore, formerly president, and Hiram H. Decker, formerly treasurer of the Monitor Iron Works of New York, have severed their connection with the Central Foundry Company.

Thomas Hanley has been appointed superintendent of the Indiana mill of the Republic Iron & Steel Company at Muncie, Ind.

George T. Robinson has succeeded the late Martin Meagher as superintendent of the Cambria Steel Company's works at Connellsville, Pa. He has been for several years chief clerk at the company's mills at Johnstown, Pa.

W. A. Barrows, Jr., has recently resigned his position as superintendent of the Saxton furnaces, at Saxton, Pa., to accept the post of general superintendent of the Shenango Furnace Company, Sharpsville, Pa.

George S. Ashworth, formerly chief mechanical engineer of the Youngstown Steel Company, has joined the staff of the Enterprise Boiler Company of Youngstown, Ohio, as contracting engineer.

Jules W. Leroux, general manager of the Structural Iron & Steel Company, who has just recovered from a severe attack of the grip, has gone to Florida. While South Mr. Leroux will arrange for the opening of a branch office for the company in Atlanta to look after the work the company are doing in the South, and also arrange to increase their trade for structural steel buildings with the cotton mills and other manufacturing interests. Mr. Leroux will also visit Alabama, where the Structural Company are erecting two large plants, and he will also visit Havana, Cuba, to look after the new hotel that H. L. Flagler of the Florida East Coast Railway Company is talking of building in that city.

John C. Pennington and Col. William Barbour have been appointed receivers for the Rogers Locomotive Company, at Paterson, N. J., at the request of Jacob Rogers and the other directors of the concern.

C. B. Fowler, at present manager of the Riverside Furnace, Cleveland, owned by Corrigan, McKinney & Co., has received an offer of the superintendency of the Marting Iron & Steel Company's furnaces at Ironton, Ohio. Mr. Fowler is a brother-in-law of J. H. King, one of the directors of the Marting Company. If he accepts the offer he will leave Cleveland March 1.

George H. Barbour, vice-president and general manager of the Michigan Stove Company of Detroit, has been appointed by the Governor of Michigan as a member of the commission of the State to the Pan-American Exposition.

George A. Just of New York is in Cuba.

William Hellaw, one of the editors of London *Engineering*, has been elected president of the Institute of Mechanical Engineers.

Thos. Mansell, assistant president of the Amalgamated Association, has resigned. It is stated on account of ill health.

The Standard Chain Company.

At their New Jersey headquarters in Jersey City, the Standard Chain Company held their first annual meeting on Tuesday, February 5. Directors and officers were elected as follows:

Directors: John C. Schmidt, J. T. Davis, Charles H. Hayden, Peter Wertz, Franz Krein, Eli Attwood, Robert Garland, Archibald S. White, Oscar L. Gubelman, Henry W. Oliver, Robert Rigney, Frederic F. Culver, Charles A. Painter.

The officers elected were:

President, John C. Schmidt.

Vice-President, A. S. White.

General Manager, J. T. Davis.

Secretary and General Sales Agent, Robert Garland.

Treasurer, Robert Rigney.

A dividend of 1¾ per cent. was declared and the balance of the profits set aside for additional reserve working capital.

In his report, the president stated that $1,800,000 had been expended during the last year for the extension and improvement of plants. The company are now directing their efforts particularly in the direction of the Lebanon Chain Works, which are to be doubled in capacity. New forges and machinery are now being installed and a testing machine is being erected which has but one duplicate in this country as to size. It will have a capacity of 600,000 pounds, and its counterpart is now operating at the United States Arsenal at Watertown, Mass. After the extension to the Lebanon works are completed the plant will be prepared to make chain up to 4 inches diameter. It will be the largest plant in this country.

HEMAN R. POWERS, who had been connected with the iron manufacturing business in and near Chicago for a number of years, died at his home in Brooklyn, N. Y., Jan. 16, of typhoid fever, aged 38 years. Mr. Powers was connected with the Moline Malleable Iron Company, representing the company in Eastern territory.

Trade Publications.

Platinum.—Baker & Co. of Newark, N. J., manufacturers of hammered platinum wire and dealers in platinum in sheet or wire of any shape or degree of hardness and suitable for all purposes, have issued a very neat note book, bound with celluloid covers, which contains much interesting information upon the use and care of platinum ware. It is here stated that although platinum is not oxidized in the air at any temperature nor attacked by any single acid, yet there are many substances that attack and combine with it at comparatively low temperatures. The caustic alkalies and the alkaline earths, nitrates and cyanides and especially the hydrates of barium and lithium attack it at a red heat although the alkaline carbonates have no effect at the highest temperatures. Phosphorus and arsenic attack it when heated with it. Direct contact of platinum with burning charcoal should be avoided since the silicon reduced from the charcoal as ash unites with the platinum making it brittle and liable to fracture. Also contact with compounds of the easily reducible metals is especially dangerous at high temperatures, as alloys with platinum having a low fusing point are readily formed. This is especially true of lead. Heating of platinum with spirit lamps is preferable to the use of ordinary gas, since when the latter is not sufficiently supplied with air a carbide of platinum is formed which, oxidizing later, blisters the metal. The book also contains tables of weights per square inch of platinum, sheet or foil, in ounces and grams. Also number of square inches of platinum foil per ounce, a table of weights per foot of platinum wire in ounces and grams, also number of feet per ounce.

Seamless Steam Tubes.—The Seamless Steel Tubes Company of Detroit, Mich., have issued a circular calling attention to their seamless steel tubes. The company's Detroit factory has been completed. In its conception, construction and equipment the endeavor has been to meet in the fullest sense the requirements necessary for the production of a seamless steel tube of the highest grade for steam engineering and other purposes.

Bolt Threading and Nut Tapping Machinery.—The Detrick & Harvey Machine Company of Baltimore, Md., who, in 1894, succeeded the Capitol Mfg. Company of Chicago in the manufacture of the well-known Adams bolt threaders, have issued a catalogue describing their bolt threading and nut tapping machinery. These machines are made in a great variety of patterns and sizes, adapting them to work of the greatest range. The Cook automatic nut tapping machine has demonstrated its practicability in both bolt and nut plants. It is designed to tap square and hexagon nuts.

Steam Separators and Traps.—The Wright Mfg. Company of Cleveland, Ohio, have issued two circulars describing their steam separator and steam trap.

Steel Tubing.—The Shelby Steel Tube Company of Cleveland, Ohio, have issued a price-list of their steel tubing.

Surface Grinders.—The George Gorton Machine Company of Racine, Wis., have prepared a catalogue describing in detail their No. 4 disk universal flat surface grinder intended for plane surfaces and segments of cylindrical surfaces. This machine has been designed with the utmost care and is intended for work requiring the greatest accuracy.

Air Compressors.—The Clayton Air Compressor Works, 26 Cortlandt street, New York, have prepared a catalogue describing the several types of air and gas compressors designed and built by them. The machines and appliances mentioned are intended for all pressures and for every purpose to which compressed air is applied.

Steam Turbines.—The article by Francis Hodgkinson on "Steam Turbines," with special reference to the Westinghouse-Parsons steam turbine, which appeared in full in *The Iron Age* of December 27 last, has been issued in pamphlet form by the Westinghouse Machine Company of Pittsburgh.

Pneumatic Punch.—In a circular received from the Pike & Childs Company, Bourse, Philadelphia, we find a description of their portable pneumatic punch, a one-man machine, designed for light and heavy work. These punches are made in three sizes, weigh 28, 145 and 775 pounds respectively, have gaps of 2½, 4 and 6 inches, and will punch 3-16, ⅜ and ¾ inch holes.

Steel Shafting.—We have received from the Pittsburgh Steel Shafting Company of Pittsburgh an interesting pamphlet containing much valuable information relating to the employment of shafts and their characteristics. A table is presented giving the horse-power of head shafts of various diameters, and at different revolutions per minute. A table of great value and which we do not think has before been computed presents the weights of finished shafts from 15-16 inch to 6 inches in diameter, and from 1 foot to 24 feet in length.

Leather Belting.—The Charles Munson Belting Company, Chicago, have issued their catalogue for 1901. It contains a price-list and general description of Munson's belting, illustrations of the manufacturing processes employed, belt dressing, belting supplies, hints and suggestions to belt consumers, rules for calculating the length of belting, tables giving circumferences of pulleys, a telegraphic code, and a great number of testimonials.

Hot Blast Stoves.—David Lamond of Pittsburgh has issued a booklet in which he describes the C. H. Foote fire brick hot blast stove, which has been before the iron making world for a number of years and of which 68 are in use in this country, the Illinois Steel Company leading off with 28. Drawings of the stove are appended.

Opening Non-Union Sheet Mills.—The special conference held in Pittsburgh last week of representatives of the Sheet Mill Workers' lodges of the Amalgamated Association adjourned without settling the question of opening the non-union mills of the American Sheet Steel Company to members of the Amalgamated Association. The matter was left to the Executive Board, and there is no doubt but that in a short time the numerous sheet mills of the American Sheet Steel Company, which are now classed as non-union, will be thrown open. There are so many of these mills that the sheet workers are desirous of having them thrown open so that they can obtain employment. There is some doubt, however, whether the officials of the American Sheet Steel Company would employ members of the Amalgamated Association. When the constituent mills of the American Sheet Steel Company were being operated independently, a good many concerns refused to employ members of the Amalgamated Association, and, in fact, would immediately discharge any man who was found to have joined that organization.

Thomas Carlin's Sons Company.—Thomas Carlin's Sons Company, operating a foundry and machine shop on River avenue, Allegheny, completed recently the building of a very large foundry, which they are now running, and which is equipped with modern appliances throughout, and is turning out some very heavy work. Included in orders on the books of this firm are three large shears for Jones & Laughlins, Limited, a large amount of special hydraulic cylinder work for Carnegie Steel Company, and three of the largest billet shears ever built. This foundry melted in January 746,100 pounds of iron, the largest month's work in the history of this firm.

At Pittsburgh, a third argument has been held in the case of Chris. Peifer against Brown & Co., Incorporated, operating the Wayne Iron & Steel Works, in that city. The case involves a patent on an improvement on furnace walls. The case has been in court since 1895, and in the first argument the court found for the plaintiff. A reargument was granted and more testimony was taken.

Phillip F. Laib and George H. Laib, formerly with the Ahrens & Ott Mfg. Company, have purchased the business of Milton W. Barkhouse, 245-247 Fifth street, Louisville, Ky., and under the name of the Laib Company will continue the jobbing of supplies for steam, water and gas.

HARDWARE.

THE question as to the attitude which the trade as a whole should take in regard to the catalogue house business is quite distinct from the question as to the way in which the individual merchant is to meet such competition. Whatever may be accomplished through the organizations of the jobbers and retailers, assuming that they can be brought to work together in this matter, there is need that the retail merchants should adopt a policy which will be for their own protection and benefit. It will not do for them to sit down idly waiting until the evil is abated. Nearly every Hardware store in the country is more or less affected by the methods pursued by the catalogue houses and department stores, the influence of the one reaching many places where the other is not as yet an important disturbing factor.

Some hard facts bearing on the question were presented in a communication printed in our last issue, which, while dealing prominently with the quality of goods handled by this class of trade, indicated in more than one way methods prevailing in the Hardware business which may call for modification or abandonment. That there are some things to be learned from the methods adopted by this class of merchants will generally be conceded, and the wise merchant will be on the lookout for any suggestions which may be turned to practical use for his own benefit and for the advancement of the interests of the Hardware trade at large.

The manner in which a merchant meets this competition and its comparatively novel methods will depend in part on the special circumstances of the case and perhaps even more on his temperament. Some taking a dignified view of the Hardware business, and recalling perhaps its successful prosecution through a series of years, will be disposed to hold their ground, adhering very largely to old methods and principles. Others, with more enterprise and perhaps a more aggressive and combative disposition, will be apt to fight back, adopting perhaps the new methods, taking, as it were, the enemies' weapons. One is not obliged to go far to find advocates for each of these courses.

In this connection we call attention to communications in another column, presenting the subject in very different ways. One is a frank recognition of the difficulties of the problem without any attempt at finding a solution. The other is a businesslike statement of the way in which the competition has been met, and with a good measure of success.

The question has often been canvassed by the National Hardware Association, whose members as jobbers are so immediately concerned in it. It will doubtless be a prominent subject for consideration at the various meetings of the State retail Hardware associations, some of whom are grappling with the problem in an earnest and determined manner. It may be that both the wholesale and retail trade may be able to come to some understanding in regard to the policy to be pursued. While this competition is of more immediate and pressing moment to the retailer, the subject is also exceedingly important to the jobber, whose position is in some ways even more seriously menaced by the apparent tendencies of trade.

Condition of Trade.

February opens with a continuation of the generally satisfactory conditions which have characterized the market. There is some increase in the volume of business and in a good many lines there is, for this time of year, an exceptional activity. The jobbing houses are placing orders quite freely, so far as the purchase of goods sure to be needed is concerned, and in view of the prospect of a large trade such orders are for the most part liberal. In some lines there is difficulty in getting the goods as promptly as desired. The condition of the general market in the matter of prices is not quite so satisfactory as in volume of business. There is a certain feeling of anxiety in regard to the maintenance for any length of time of prices which are held at a level materially higher than the trade have been accustomed to. In the case of goods controlled by very strong interests or associations there is not much fear of an early break, but there is still a disposition in such lines to avoid contracting far ahead. The advance in Wire and Nails announced last week has no doubt contributed to the immediate strength of the market and tends to keep up the confidence of the trade. There are, however, several lines in which the prices are ragged and more or less demoralized. There is also in many lines a gradual descent from the high levels which were reached during the boom period. This calls for the revision of quotations in many minor and some staple goods. In the present condition of things there is need of constant alertness on the part of buyers in jobbing houses and also in the retail establishments where this matter is looked after carefully. While different opinions are held in regard to the probable course of the market and the maintenance of prices in certain lines, there is general agreement among the trade, large and small, that the policy of buying enough goods to keep the stock up to a good working point is both safe and wise.

Special Reports.

Chicago.

(By Telegraph.)

The volume of business in Shelf Hardware is running much ahead of the corresponding time last year. It has been stimulated during the week by the advances in Wire products. The unexpected advance in those lines has not only affected trade in other goods which are well controlled by the manufacturers, but appears to have induced increasing buying in the general lines. The conservatism of merchants has been considerably shaken by this occurrence, and the trade is now inclined to believe not only that prices will be maintained but that an upward tendency is to be expected in Hardware generally. The demand for metals has been considerably better and a much heavier trade is expected as spring approaches. Fine trade is enjoyed by Heavy Hardware jobbers, which has been quickened by the more seasonable weather. Manufacturers and jobbers alike report a greatly increasing demand for Horseshoes. The movement of Iron and Steel is also unusually heavy for the season.

St. Louis.

Jobbers report that January sales, both in tonnage and value, ran ahead of last year. This month opens up encouragingly, even though a slight falling off was noted, due to the snow and rain storm prevalent in this territory during the first few days. Volunteer orders from the trade and orders sent in by traveling men are for an assorted line of goods. The advance in Wire and Wire Nails stimulated the demand for these products quite decidedly. There were a number of carload deals under way which customers tried to close at old prices after the advance was announced. The Heavy Hardware jobbers are in receipt of an excellent business, and

say that their principal concern is to obtain the goods from mills and factories

Baltimore.

CARLIN & FULTON.—A feature of the Hardware business, though possibly it may not be a peculiarity of only that branch of trade, is that we live so greatly in the future; and after anticipating necessarily the probable wants of a market six months or a year ahead the desire to see those wants develop and absorb what we have provided makes us eager to have the seasons come and go neglectful of the fact that we can soon reckon more years behind than before us.

The occasion for these remarks is the thought that while it seems but a very short while since the last crops were gathered, in fact, so very short that the exact yield of cotton is a matter of speculation (for the particulars of which see the victims of the January corner in that commodity) we are studying over the acreage now being planted, wondering at the great demand for staples needed in the work, annoyed at the scarcity of some goods, vexed that the greatest demand is always for just that brand or size which the factories find every one wants, and therefore unable to furnish at the moment of need, and amused (?) no! rather surprised at the impatience of customers for the immediate shipment of goods which when it is a question of dating the invoice are not really needed for two months after date of shipment.

The demand for Heavy Hardware in the line of plantation supplies has been very great, and the shipments of Trace Chains, Hames, Shovels, Forks and similar goods have been very large.

We are also compelled to consider the requirements for the next wheat crop, and the question now before us is, "What shall the harvest be?"

Will the demand for Scythes and Cradles next spring be great enough to necessitate purchases at present prices or will every one be exceedingly conservative and await lower figures?

To be sure, this year there is no factory competition, and a crop ready for the Scythe cannot stand in the field uncut awaiting the dissolution of a trust; but it is natural to suppose that the demand will be curtailed very greatly. But, though large or small, this demand must be met, and as jobbers' stocks were greatly depleted by last year's sales the factories may find later in the season an urgent demand for quick shipments, just as the Chain makers are experiencing now.

The advance in Wire and Nails indicates a most satisfactory business to the manufacturers in those great staples and will no doubt prove a stimulus to other lines.

It is possibly not well to attempt the role of a prophet, but with every indication pointing to a large business this year, it would seem that some other articles which have been lately hammered down to unremunerative, if not absurd prices, might show a tendency to the other extreme.

Louisville.

W. B. BELKNAP & Co.—The market is in a healthy, active condition. We have been treated to no surprises, except the moderate advance in Wire and Nails, during the past week, and we believe that the strong demand and the difficulty in getting assorted orders filled promptly justified the moderate advance of this kind, although it may not have been called for by reason of any scantiness of profits in manufacture.

The fine open winter which we have enjoyed thus far has permitted building to proceed uninterruptedly. Hence a strong consuming demand for Nails, Wire, with everything else which pertains to outdoor work. Labor has never been so well employed in all our experience, and there is every prospect of this happy state of affairs continuing.

Notwithstanding the fact that the river is open to navigation, owing to the mild season, and great cargoes of material are coming down the Ohio every few days from Pittsburgh and Wheeling, the railroads are more fully employed than usual and are ordering equipment freely.

His friends here were distressed to learn of the death of W. D. Supplee in Philadelphia. He was known to us and endeared to us personally, and his premature taking off gives us a deep sense of personal loss.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The Hardware jobbers of this city report that sales for the month of January were the largest in their history. The flood of orders was simply wonderful, and there seems to be no let up.

The mild, open weather has been most favorable to outdoor operations and construction work of all kinds, consequently the movement of Farming Tools, supplies generally and Builders' Hardware has been very heavy.

The sale of spring and summer goods commenced even earlier than usual, and has been in larger volume than ever before, including such lines as Wire Cloth, Screen Doors, Poultry Netting, Freezers, Lawn Mowers, Fishing Tackle, Refrigerators, Hammocks, Hames, Chains, Saddlery Goods and Garden Tools.

Nails and Wire have been advanced 10 cents in this market this week.

Collections continue to be extremely good.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The month of January closes with trade conditions practically unchanged. Jobbers are well satisfied with the amount of business doing and this midwinter month makes a very satisfactory exhibit.

The country demand for Hardware and kindred goods continues to be of very respectable proportions, and, with the spring season in view, it is expected that trade will develop to such an extent that even last year's record will be eclipsed.

From whatever point the situation may be viewed, the most gratifying evidences are apparent, while the prospects for the future are full of promise.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—With Portland leading all ports of the United States in wheat exports for December, and showing an increase of 100 per cent. over December, 1899; with bank clearings showing gains of 25 per cent. last week and 41 per cent. the week prior, over corresponding weeks in 1900, we think the new century is no misfit. So far weather, too, has been all that could be desired, either for health, pleasure or tending to make good crop prospects.

Immigration is showing up well and reports from all sections show that none are slighted. Two different parties have been investigating our timber resources, and as a result one party has families and machinery on the way for manufacturing cars and the other party can join forces to establish a factory in this city employing 50 men, with up to date machinery, our ash, spruce and fir being of the best.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade during the month of January with wholesale houses was quite equal to that of the same month one year ago, indeed some houses refer to it as an advance in volume of trade.

The Screw market here, as elsewhere, has been considerably demoralized, while, on the other hand, certain lines of goods show signs of stiffening in price. Collections are fair.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—January business has been about the same as last year's for that period. It has not shown any spasmodic features. On the contrary, both as to demand and also prices, there has been a large degree of stability, and the conditions are justly regarded as favorable for a healthy trade in the future.

Notes on Prices.

Wire Nails.—The advance of 10 cents per keg at mill in price of Wire Nails on January 29 was a general surprise and found many jobbers with moderate or low stocks. The anticipation, however, of an advance in price which was prevalent before January 1, and for which it is understood there was good reason, caused

many orders to be placed. This was followed by rumors of possible war among large interests which, if it occurred, was likely to mean that prices might be lower. In the absence of any prospect of an advance and with the possibility of a decline, stocks of Wire Nails were accordingly allowed to run low. The near approach of Spring demand has caused good orders to be placed at the advance. Some jobbers were fortunate in placing contracts before the advance, to be shipped at the reduced freight rate. Quotations at the advance are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....$2.30
To jobbers in less than carload lots..... 2.35
To retailers in carload lots..... 2.40
To retailers in less than carload lots..... 2.50

New York.—The net advance of 5 cents in the cost of Wire Nails at this point has not had much of an effect upon the price of small lots at store. Stocks bought previous to the advance appear to be ample, and while some jobbers quote from $2.55 to $2.60, the former price is quite general. Quotatiois are as follows:

To retailers, carloads on dock.....$2.53
Small lots at store.....2.55 to 2.60

Chicago, by Telegraph.—The advance made by the manufacturers in the price of Wire Nails last week caught the trade napping. Merchants had been purchasing very cautiously, being undecided whether prices would be maintained or reduced. Consequently when the advance was made they were caught with very light stocks. It was believed at first that the advance was a mistake in business judgment, but this view of the case has been completely changed by subsequent occurrences. The demand has been wonderfully stimulated, the business placed at the higher prices having been very heavy not only as to large buyers, but also the retail trade. Carload lots are quoted at $2.45 and small lots from stock at $2.50.

St. Louis.—The advance of 10 cents per keg on Wire Nails has brought forward business which had been held back. On the whole the new price has caused an increase in sales, the trade apparently deciding that no lower prices can be expected for some time to come. Price to retailers in carloads is now $2.50, base; for smaller lots, $2.55, base.

Pittsburgh.—We note a continued excellent demand for Wire Nails and volume of business in January was large, the American Steel & Wire Company reporting the month one of the busiest in their history. All indications point to a large spring trade in Wire Nails, and it is not believed the slight advance of 10 cents a keg made will curtail demand in the slightest. The lower rates of freight on Nails went into effect February 1. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....$2.30
To jobbers in less than carload lots..... 2.35
To retailers in carload lots..... 2.40
To retailers in less than carload lots..... 2.50

Cut Nails.—As announced in our issue of January 31, the manufacturers made an advance in the price of Cut Nails of 5 cents per keg, at mill. Quotations are made at a delivered price based on the Pittsburgh price, to which freight to destination according to the rate book which is used for this purpose is to be added, the purchaser to deduct on settlement the actual freight paid. The movement thus far is of only moderate volume, the demand being confined mostly to small lots. Quotations accordingly are as follows, f.o.b Pittsburgh, plus freight, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....$2.00
To jobbers in less than carload lots..... 2.05
To retailers in less than carload lots..... 2.15

New York.—The manufacturers inaugurated a new system of quoting Cut Nails on January 30, at which time they announced an advance in price of 5 cents per keg. To jobbers in New York territory Nails in carloads are now quoted at a delivered price on a basis of $2 per keg, f.o.b. Pittsburgh, plus freight as per "melon-colored book," which to this point is 15 cents per 100 pounds, the actual freight paid (which is now 13 cents) to be deducted in settlement. Stocks in jobbers' hands bought previous to the advance may make it difficult to sustain the new quotations to retailers in less than carload lots on dock and small lots from store. Before the advance small lots from store sold, in some cases, as low as $2.20. Quotations are as follows:

To jobbers in carload lots on dock.....$2.15
To jobbers in less than carload lots on dock..... 2.20
To retailers in less than carload lots on dock..... 2.30
Small lots from store..... $2.25 to $2.30

Chicago, by Telegraph.—The improved business in Wire Nails has carried with it a better demand for Cut Nails. Prices have been advanced and carload lots are now held at $2.25 and small lots from stock at $2.35.

St. Louis.—Following the new price on Wire Nails, an advance has been made in Cut Nails, but only to the extent of 5 cents per keg. New prices range from $2.35 to $2.45, base. About the average tonnage is being sold.

Pittsburgh.—The Cut Nail Association met last week and advanced prices 5 cents a keg. New prices are as follows: To jobbers, the prices will be on carload lots $2 rates, and on less quantities $2.05 rates, f.o.b. Pittsburgh, plus the sixth-class rates of freight contained in the "melon colored" rate book, less actual freight rates. To small dealers and consumers $2.15 rates, f.o.b. Pittsburgh, plus the fifth-class "melon colored" rates, less the actual current rates; terms 60 days, less 2 per cent. for cash in 10 days. Demand for Cut Nails is only fair, being confined mostly to small lots.

Barb Wire.—Demand for Barb Wire is improving. The indications are for a heavy spring trade. Quotations for domestic trade are as follows, f.o.b. Pittsburgh, net cash 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....$2.60
To jobbers in carload lots, Galvanized..... 2.90
To jobbers in less than carload lots, Painted..... 2.65
To jobbers in less than carload lots, Galvanized.... 2.95
To retailers in carload lots, Painted..... 2.70
To retailers in carload lots, Galvanized..... 3.00
To retailers in less than carload lots, Painted..... 2.80
To retailers in less than carload lots, Galvanized... 3.10

Chicago, by Telegraph.—The advance made by manufacturers has caused a very heavy influx of orders, particularly from the Southwest. Manufacturers have been obliged to start idle machines to enable them to keep up with their orders, as they had practically no stocks on hand. Local jobbers report an increasing movement from stock, but at this season of the year they do not ordinarily expect much trade. Carload lots are quoted at $2.75 for Painted and $3.05 for Galvanized, and small lots at $2.80 and $3.10, respectively.

St. Louis.—The remarkable tonnage of Barb Wire being handled by the trade has experienced no falling off on the announcement of the 10-cent advance. Constant surprise is expressed at the strong movement. Painted, in carloads to retailers, is now $2.80; smaller quantities, $2.85. Galvanized is 30 cents higher.

Pittsburgh.—We note a good demand for Barb Wire and it is believed requirements of spring trade will be heavy. Shipments this month are expected to be large, some tonnage being held over from January waiting the lower freights which went into effect February 1. For domestic trade we quote: Galvanized Barb Wire, $2.90, in carload lots to jobbers, and Painted, $2.60. Terms 60 days, net, 2 per cent. discount for cash in 10 days, f.o.b Pittsburgh.

Plain Wire.—The demand for Plain Wire is fair, with expectations of a larger trade in the spring. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes. Plain.	Galv.
To jobbers in carload lots	$2.25	$2.65
To jobbers in less than carload lots	2.30	2.70
To retailers in carload lots	2.35	2.75
To retailers in less than carload lots	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the advances indicated in the following table:

Plain Fence Wire Advances (Catch Weights).

Nos.					Galvanized.
6 to 9	Base				$0.40 extra.
10	$0.05	advance	over	base	.40 "
11	.10	"	"	"	.40 "
12 and 12½	.15	"	"	"	.40 "
13	.25	"	"	"	.40 "
14	.35	"	"	"	.40 "
15	.45	"	"	"	.75 "
16	.55	"	"	"	.75 "
17	.70	"	"	"	1.00 "
18	.85	"	"	"	1.00 "

For even weight bundles, 50 pounds or over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—A greatly increased business is reported in Plain Wire as a result of the recent advance. It has also brought with it a brisk trade in Bale Ties, the demand for which has opened up considerably earlier than usual. Prices on Bale Ties are also stiffening. Carload loads of Plain Wire are now quoted at $2.40, base, and small lots from stock at $2.45.

Pittsburgh.—There is a fair demand, which is expected to be larger when spring trade opens. A good deal of Wire is now sold on the market in the form of Woven Fencing. The reduced freights went into effect February 1. For domestic trade we quote:

	Plain.
To jobbers in carload lots	$2.25
To jobbers in less than carload lots	2.30
To retailers in carload lots	2.35
To retailers in less than carload lots	2.45

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, $1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

Screws.—For some time the Screw market has been irregular, with a decided drift toward lower prices. So much so has this been the case that the base discount of 87½ per cent. agreed upon by the manufacturers became largely nominal, in view of the series of extras which were more or less freely given. To meet this condition of things reduced prices were announced under date February 1 in which the base discount was made 90 per cent. The manufacturers are anticipating that this discount will be pretty closely adhered to, so that the announced prices will represent the market as usual. The new discounts are as follows:

	Discount.
Flat Head Iron	90 %
Round and Oval Head Iron	87½ %
Round and Oval Head Piano, unpolished	87½ %
Fillister Head Iron	85 %
Flat Head Brass	87½ %
Round and Oval Head Brass	85 %
Flat Head Bronze Metal	80 %
Round and Oval Head Bronze Metal	77½ %
Flat Head Nickel Plated on Iron	80 %
Round and Oval Head Nickel Plated on Iron	80 %
Flat Head Nickel Plated on Brass	80 %
Round and Oval Head Nickel Plated on Brass	80 %

Flat Head Iron Screws, Blued and Black, 5 per cent. advance on net.

Wire Picture Cord.—The market for Wire Picture Cord is in a very unsatisfactory condition. There appears to be no agreement among the manufacturers in regard to the list prices, some of them using the revised list of October 2, 1900, and others the old and lower list. Some of the prices reported are exceedingly low and referred to as down to the cost of the Wire. There is also a good deal of complaint in regard to the quality of the goods—the gauge of the Wire, number of strands, shortage in measurement, quality of coating, &c. There is evidently an opportunity here for the trade to give careful attention to the matter of price and grade of goods purchased.

Tire Bolts.—The substantial reduction made in the price of Tire Bolts is referred to as bringing the goods to a level where there is little opportunity for concessions in price beyond the regularly established extras. As a result of this condition present prices are much better maintained than for some time.

Shot.—The Shot market is irregular in prices and the competition between the manufacturers is animated. The market is represented in a general way by the prices given below, which are those of the American Shot & Lead Company, the leading interest in this line. They are announced as applying to ton lots and not subject to the usual abatement of 10 cents in such lots; terms, net cash 30 days, or 2 per cent. discount for cash in ten days:

Drop Shot, sizes smaller than B, per 25-lb. bag	$1.25
Drop Shot, B and larger sizes, per 25-lb. bag	1.30
Buck and Chilled Shot, per 25-lb. bag	1.30
Dust Shot, per 25-lb. bag	1.50

Prices of outside manufacturers do not agree in all cases with those mentioned above, some of them quoting somewhat higher figures, while in other cases those given are met, and in exceptional cases even slightly lower prices named.

Russell & Erwin Mfg. Company.—Under date February 1, Russell & Erwin Mfg. Company, New Britain, Conn., and New York, have issued a revised discount sheet, giving the new discounts on Wood Screws, together with list prices. It also gives lists and discounts on the following goods: Machine Screws, Stove Bolts, Sink Bolts, Tire Bolts, Machine Screw and Bolt Nuts, Steel Wire Nails and Brads, Escutcheon Pins, &c., on which the prices are revised and brought down to date.

Files.—A number of rumors are current in regard to negotiations with a view to consolidation in the File trade, and among these is the report, for which there is apparent foundation, that the plant of one of the largest manufacturers has been purchased by the leading interest in this line. In regard to what is being attempted in other directions there are many conjectures abroad, but those immediately concerned in the matter are reticent and no definite information is given out. There is little reason to doubt that as the result of these efforts whatever may be the precise object in view, the market will be in a better condition than heretofore and competition will be somewhat diminished.

Picks and Mattocks.—The market is showing something of a reaction from the extremely low prices which have been current on Picks and Mattocks. Some of the manufacturers at least have withdrawn their quotations and are naming slightly higher prices.

Binder Twine.—Conditions in the Eastern Binder Twine market continue about the same as at our last report. Buyers are not ordering freely. In some portions of the West the demand for Twine is reported as being quite active. Some of the large binder manufacturers deny that they have been instrumental in keeping up the price of hemp, or in depressing the price of Twine. They contend that competition compels them to sell at present prices. Some large Western jobbers of Twine refuse to guarantee prices against those which may be made by competitors, but do guarantee against prices that they may make themselves up to a specified date. General quotations are as follows for small lots of Twine, with a rebate of ¼ cent per pound for carload lots, f.o.b. Eastern factory:

White Sisal, 500 feet per pound	7½c.
Standard, 500 feet per pound	7½c.
Manila, 600 feet per pound	9 to 9¼c.
Pure Manila, 650 feet per pound	10½c.

Western quotations on Sisal and Standard Twine are ¼ cent in advance of the above. On Manila they range from ¼ cent to ½ cent higher, and on Pure Manila ¼ cent advance.

Paints and Colors.—*Leads.*—White Lead in Oil is without change in price, but subsequent advances in Linseed Oil will probably make a higher price for Lead imperative. Orders are coming in slowly and grinders are proceeding cautiously in the manufacture of Lead in Oil. Prices are as follows: In lots of 500 pounds and over, 6½ cents per pound; in lots of less than 500 pounds, 7 cents per pound.

Oils.—*Linseed Oil.*—During the week the market on Linseed Oil has advanced and more uniformity in price exists in quotations of various crushers. City Raw is held at 65 to 67 cents in lots of five barrels or more, with an advance of 1 cent for less than five barrels. State and Western brands are sold at from 65 to 66 cents per gallon in large lots. Boiled Oil is 2 cents per gallon advance. Oil is comparatively scarce and it is difficult to place orders for more than two carloads at a time. The market is firm and higher prices would not surprise the trade. Buying is confined to necessary requirements.

Spirits Turpentine.—Large consumers and other large buyers are keeping out of the Turpentine market. The volume of business is moderate. Prices are as follows: Southerns, 40 cents; machine made barrels, 40½ cents per gallon.

Trade Organizations.

North Dakota Retail Hardware Association.

The North Dakota Retail Hardware Association have issued their official programme for the fourth annual meeting to be held at Grand Forks, February 20 and 21. The programme is a handsomely illustrated souvenir of the occasion, comprising 122 pages of advertisements and reading matter, giving a great deal of interesting information relative to not only the North Dakota association but retail hardware dealers' associations generally. The souvenir is formally opened by an appropriate greeting from H. I. Helgesen, president of the association, from which we take the following extract:

TO THE HARDWARE DEALERS OF NORTH DAKOTA.

We are asking the co-operation of the manufacturers and jobbers whose interests in this cause are identical with our own, and this co-operation can only be secured by every dealer showing by his purchases that he knows who are his friends and that he appreciates their sympathies and support. If every retail Hardware dealer in the country would join the association and carefully practice this broad reciprocity with friends and enemies alike, the battle would soon be over. I would therefore say to every dealer who is not a member of our association: Join our ranks and thereby add your influence for the protection of the individual rights that ought to be the inheritance of every American citizen.

To our members I wish to say that our success depends on your loyalty to the principle underlying and the rules and regulations governing our association. The one question we meet on every side in approaching jobber or manufacturer in the interest of our association is: "What can we expect in return if we decide to cast our lot with your association?" This shows the necessity for proving to their satisfaction that our association is not based on a vague theory, but on a hard headed business proposition, whose foundation is that magic though most practical word, reciprocity. Each member should therefore bear in mind that upon him and his actions depends our success. If this personal responsibility was fully appreciated by every member many of the obstacles in our road to success would be removed.

The experiences of the various State and Northwestern associations led to the formation last March of the Interstate Retail Hardware Dealers' Association, now embracing seven States, which has already proved its usefulness. This will ere long be superseded by a National Association, which is really the object toward which we have been working. We will then be in a position to deal with the questions at issue from a broader and more far reaching standpoint, and then success will be in easy reach if every one interested will courageously and faithfully do his duty. Will you do yours?

Reference was made in our last issue to the programme of the meeting, including the names of those who will present papers on topics of interest to the trade. It is anticipated that quite a number of manufacturers and jobbers and their traveling salesmen will be in attendance, many already having reserved quarters at the various hotels. It will certainly be a great convention week for Grand Forks, as the Implement Dealers' Association of North Dakota and Northwestern Minnesota, as well as the North Dakota Grocers' Association, will meet on the same day as the Hardware Association. C. N. Barnes, Grand Forks, secretary, advises us that he is in daily receipt of letters from members who say they will bring recruits with them, and unless all signs fail the coming meeting should prove the best attended in its history.

Iowa Retail Hardware Dealers' Association.

The following circular, relating to the annual convention on February 13, 14 and 15, has been issued by C. W. Brelsford, Villisca, secretary of the Iowa Retail Hardware Dealers' Association.

The third annual convention of the Iowa Retail Harware Dealers' Association will meet in Dubuque February 13 and 14, 1901. It is very important that we have a large attendance at this meeting and from present indications it will, without doubt, be the largest as well as the most interesting meeting we have yet held. An elegant programme has been prepared. We have secured a rate of one and one-third fare for the round trip, on the certificate plan, from all points in Iowa. Tickets on sale three days prior to opening day and good for returning until third day after closing day of convention. Do not fail to secure a receipt from your agent when you purchase your ticket, and present this receipt to the secretary at Dubuque for his signature. This receipt properly indorsed will entitle you to return ticket at one-third regular fare.

Our work so far has resulted in much good, not only to our members but to all dealers in Iowa. You may be an old and a successful dealer, but by meeting with several hundred of the best Hardwaremen throughout the State you will find that you can learn much that will be useful to you. We would like to see every member of the association as well as a large number who are not members present on the opening day. Come prepared to say something. With programme we inclose you addressed postal card. Please advise us whether you expect to attend or not, with any remarks you wish to make.

The convention will comprise six sessions, three on Wednesday, two on Thursday, and one on Friday morning. While most of the sessions will be executive there will also be two open sessions in which jobbers and manufacturers will participate. The Question Box will be a feature of the convention as in the past. On Thursday evening the members will attend a performance at the Opera House at the invitation of the manufacturers and jobbers of the city, whose establishments will be visited on Friday afternoon.

The following papers will be read at the convention:

"The Mutual Relation of the Retailer and Jobber," by H. E. Tredway, Dubuque.

"Retail Business *vs.* Banking," by A. T. Nelson, Wilton Junction.

"Side Lines," by G. L. Miles, Grinnell.

"Some Elements of Success," by W. A. McIntire, Ottumwa.

Fred. H. Cozzens, secretary of the Interstate Retail Hardware Dealers' Association, will also make an address.

C. J. Gilson & Co., Titusville, Pa., dealers in Hardware, Stoves, Farm Implements, &c., who have occupied the store at the southwest corner of Washington street and Central avenue, are removing to the opposite side of the street to the double stores in the Odd Fellows' Block, where their facilities for doing business will be greatly increased.

Owing to poor health George Hayden has disposed of his interest in the Hardware firm of Hayden & Gay, Jacksonville, Ill., to his partner, Geo. S. Gay, who will continue under his own name at the old stand. Mr. Hayden has been in business in Jacksonville for the past 43 years, the last 12 of which was with Mr. Gay as a partner.

The Retail Hardware Merchants and Catalogue Houses.

IN the following letter an enterprising and successful Western merchant, without treating the subject as a problem which is confronting the trade, describes the way in which he meets with a good measure of success the competition of catalogue houses:

To combat the evil effects of competition of catalogue houses it is necessary to know which of your customers are in the habit of sending off for goods, or contemplate doing so, have a talk with them and meet prices if possible; these prices should include freight and express charges, as your customer in sending off would have to pay them, and as these charges are high on small shipments, I have found very few instances where I could not compete. In some cases the profit would be small, in others very fair.

I have another very strong argument: I explain to my customers that if they buy at my store they can see and examine what they buy, see exactly what they get, and if necessary may exchange, if after taking goods home they find they want something different. All this they cannot do if they send off for the goods; they have to send the money and take what the catalogue house sends them; to exchange would be very expensive, as they would have to pay express or freight both ways. This reasoning, as a rule, has the desired effect.

It is also advisable to buy some cheaper goods than are generally handled; this answers several purposes: you can supply people who want a Padlock for 5 cents, Hatchet for 10 cents, &c., you can show others the difference between shoddy and regular goods, and also explain that if any firm advertise low prices they will most likely send them the shoddy goods.

Further, I am on the lookout for people that have come to grief by buying from catalogue houses—viz.: A man wanted a Tire Drill. My price was $2.75. This price was too high, as he could order it from Chicago for $1. I could not convince him that a Tire Drill could not be had for $1. About two weeks later the same man called at my store and asked to exchange a Tire Drill. On looking at his Drill I found it to be a small affair weighing 4 or 5 pounds—more like a toy than anything else. I could not use the Drill, nor could he, as it was entirely too small for blacksmiths' work, so it was returned. My friend was $1 out of pocket for express charges both ways and had no Drill.

Another case: One of my customers asked for the lowest price on corrugated roofing. I could not near meet the price he had, so he ordered from a catalogue house. When the roofing came he found that he had different gauges, 18 to 22, different widths and lengths, different patterns; and as the roofing had been used some of the sheets had nail holes in them. He had bought this roofing by weight, and as it was considerably thicker than common roofing it covered only about three-fourths of his roof. By the time he got through with his roof he found it cost him 50 per cent. more than if he had bought regular goods at home. Quite a lot of mishaps of this kind have come to my knowledge, and I make free use of them, and convince my customers that it is to their advantage to buy at home.

To recapitulate. The means to combat catalogue houses:

1. Meet prices if possible.
2. Explain to customers the advantage of examining goods, which they cannot do by sending off.
3. Have some cheap goods to meet competition, or show the difference in the grade of goods.
4. Keep track of people that have been disappointed by sending off for goods, and use this as an argument against catalogue houses.

Another View.

Another successful merchant in the Middle West, alluding to the serious difficulty presented in connection with catalogue house competition, expresses his view of the situation as follows:

There lives not a man but has the privilege of starting a catalogue house. Persuasion will avail nothing. Legislation cannot reach him. There is no way to prevent me from selling a saw mill or a spool of thread. A woman just left my store saying: "I am looking around to see whether I will buy a Cook Stove here or send to Chicago for one."

Now, 60 miles east of me is a small stove foundry. They make a good cheap Cook Stove. A Chicago house takes their entire output. Can any one, or any association, by entreaty or legislation, or by "influence and wisdom," stop this leak for the legitimate dealer? We cannot influence our home customer with the plea that the catalogue houses are putting out "shyster" goods, for they are not. The Stove I speak of is a good one, and offered cheaper than I can sell it.

It strikes me we ought to say less about this question. The more we say about it the more we advertise them. Why discuss it?

Some 20 years ago I was simply an Implement dealer. I added the Stove and Tin business, then Hardware, then the Vehicle business. This latter angered and badly hurt our local Buggy makers—some half-dozen or more. They all but one signed an agreement that they would do no repairing or shop work for me. In a very few days I had a repair shop.

Now, haven't I the same right to multiply my trade to-day? May I not put a millinery corner in my store, a soda fountain, a confectionery stand? May I not send goods out by mail, express or freight, *ad infinitum?* I am now kept back from adding other lines to my business by a friendly feeling for some of my business acquaintances, whom I would hurt.

Requests for Catalogues, Quotations, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

THE NASHVILLE HARDWARE COMPANY, Nashville, Tenn., advise us that they would be pleased to receive printed matter and quotations relating to Hardware specialties suitable for the trade in Tennessee.

Sisson & Smalley, dealers in Shelf and Heavy Hardware, Agricultural Implements, &c., Cuba, N. Y., will open a branch store in Belmont, N. Y., about February 10, under the name of the Sisson & Smalley Company. The store will be under the management of W. A. Hosley, the resident member of the new firm. They request copies of catalogues, price-lists, &c.

A. L. Henly & Son, Hardware jobbers and dealers, 2620 Kensington avenue, Philadelphia, Pa., request catalogues from manufacturers of Machinists' Tools and Hardware Novelties.

W. A. Leneave has disposed of his interest in the Hardware and grocery firm of E. F. Lockett & Co., Crewe, Va., to Mr. Lockett, and with his brother, G. D. Leneave, has bought out the business of R. A. Bradshaw, which will be continued under the style of Leneave Brothers. The new firm will carry a full line of Hardware and request copies of catalogues, price-lists, &c.

Geo. F. Guy, Bradford, Pa., who has been head salesman with Geo. A. Bodine for the past 12 years and has had 18 years' experience in the Hardware business, is about to open a retail store in that city. Mr. Guy will handle a line embracing Shelf Goods, Stoves and House Furnishings, and desires copies of catalogues, price-lists, &c.

A. E. Froyd & Co. is the style under which a new firm will open up in the Hardware business at Moline, Ill., about April 1. They will make a specialty of Builders' Hardware and fine Mechanics' Tools, and request that catalogues and quotations pertaining to these lines be sent to them.

British Letter.

FROM OUR BRITISH CORRESPONDENT.

THE special contribution in your issue of December 20, on the passing away of the factor in the English Hardware trade, gives point to much that I have already told your readers. Your correspondent states the case succinctly and accurately. The factor, in the old sense of the word, is fast disappearing because as a rule he has not the capital to meet modern requirements. Your contributor says: "The system of the factor is only to order up goods to supply the orders in hand direct from the various local manufacturers through South Staffordshire. While all the factors are in this locality the merchants or jobbers are to be found in every part of the country." This is true with certain reservations. The wholesale merchant is quite as centralized as was the factor, but the difference between the two is that, whereas the merchant is now in large measure a banker giving large credits and also stocking goods largely, the factor was not and is not able to give such large credits and does not stock the vast bulk of his goods, but merely the leading lines.

I do not think your contributor is quite accurate in his reference to credit. While it is quite true that many merchants are now selling at one month and 5 per cent., or three months and 2½ per cent., it still remains true that English ironmongers pay slowly. At the end of three months' credit it is not an unusual thing for the merchant to take a three or six months' note. In a large number of cases these bills are simply held in the safe until maturity. They are seldom discounted.

Slow Payments.

I have more than once in previous letters pointed out that American manufacturers or merchants who look to doing a merchanting trade in this country must be prepared for slow payments. The president of a large American Hardware house was recently going over the books of the English branch and was appalled at the large number of accounts long overdue. He turned to his manager in consternation and remarked that he thought the business was in a state of bankruptcy. The manager only laughed, for he knew his customers. If American manufacturers think they are going to sell their goods on a strict credit limit, they will make a mistake that may cost them dearly. If I were an American manufacturer, opening up a branch establishment in this country, I should base my prices on an average credit of six months, and even then I do not think I should be much on the safe side.

Direct Representation.

But your contributor is absolutely right when he tells your readers that direct representation is the right course to adopt. The factor is not in it. To begin with, if a factor receives a large order from one of his customers prompt delivery is expected. As the factor cannot deliver the goods quickly, he gets left if some merchant house who notoriously stock the American goods required are in the running. Prompt delivery is now the order of the day. When prices are changed with startling suddenness, as is the tendency to-day, the factor always stands to lose, because he does not posses his own stock, and is at the mercy of the manufacturer. The number of factors who have many travelers out is fast decreasing; they have been absorbed by the merchant.

The Importance of Catalogues.

Another reason why it is important for American manufacturers to be well in with merchants is because the merchants are year by year spending large sums of money on the issue of catalogues. It is very important to have your goods illustrated and quoted in these catalogues, because to an astonishing degree they have substituted work formerly done by the commercial traveler. Obviously the factor is not in the position to produce anything like a large, comprehensive and reliable catalogue, for the reason that he cannot make his quotations with the same authority as the merchants. Then, again, ironmongers are not over fond of intricate bookkeeping and, when they find large merchant firms who can supply them with a large variety of Hardware goods and accommodate them in the way of credit, they prefer to deal with such rather than enter upon their ledgers a multiplicity of accounts of small factors and manufacturers. I suppose an ironmonger never orders a line of Hardware goods from his merchant without knowing that with some trouble he could buy each article slightly cheaper. But, upon the other hand, he avoids complexity of accounts, secures continuity of treatment and always knows how he stands without any elaborate balancing up of his books.

Of course, as a retailer's business grows, he likes to become more and more independent both of the merchant and factor and to get into direct communication with the manufacturer. The representative of an American manufacturing house should never waste time on small retailers in the provincial towns. Let him cultivate the merchant and the large retailer and he will find that through the merchant he is supplying the small retailer. The personal visit to the large retailer is absolutely necessary; the merchant's catalogue reaches the smaller man. One Hardware merchant firm are this year spending $20,000 on a new catalogue. The firm in question are quite open to deal with Americans and the American traders should get their goods illustrated and quoted therein. Of course, in so far as the retailer gets nearer to a cash basis in his own business, he is in a position to pay cash for his goods and take his discount. But although the Hardware trade journals of this country have urged the importance of cultivating a cash trade, I should say that 95 per cent. of the retail Hardware trade is still on a credit basis.

The Commission House and the Shipper.

A further remark by your contributor upon the danger of American firms leaving their export business in the hands of a commission house is both timely and true. This refers particularly to the London trade. There are hundreds of exporters in London who receive by each mail large indents from their customers throughout the world. It is the business of these shippers to buy to the best advantage for their clients. I have no doubt they do their best but, as a mere matter of practice, whenever American goods are specified the order is simply given to an American commission house with the result that the purchaser is paying a double commission on goods ordered from America. Any American firm stocking goods in this country should be in the closest touch with these shipping firms, both in London, Manchester, Glasgow and Bristol. I have no doubt that the commission houses do their best, but in time they become as much the slaves of routine as does the British shipper, and having opened up connections with various American manufacturing concerns they are apt to overlook newcomers. As young American houses are now cropping up on all sides their better chance of doing business is to get direct to the British buyer, whether he be the shipper, the merchant or the retailer.

The Agent.

On the other hand it is quite obvious that there are numerous firms making one or two lines of goods whom it would not pay to open up a special warehouse and engage special travelers on this side. What are they to do? Their particular requirements have called into existence a new class of business man, namely, the agent, about whom I have already written at length. In any case, the agent (if you can get a good one) is an excellent forerunner for larger operations. But the difficulty is that really successful agents, who invoice goods in the names of their principals, are very chary of opening up a trade for an American house if they suspect that when they have worked the trade up to a remunerative degree the American house will take the business from them and open up on their own account. I have recently come across a good many cases where genuine injustice has been done to the agent in this way. And there are two incidents in my mind where the agent has got level with his quondam principals by holding his own connection and selling a competitive line. However, each case must be judged on its merits and it is impossible to dogmatize when the Hardware trade embraces such a bewildering variety of goods, some of which sell readily

and in large quantities and others only spasmodically and in small quantities. The conclusion of the matter would seem to be:

1. If you decide to open up your own British department, do it well and be prepared to lose on the first year's trading.

2. If that policy is not feasible, cultivate the best merchants until, by patience, method and quality, you have got into their books and their catalogues and then stand loyally by them, although, of course, a certain number of large retailers may be canvassed too.

3. If both the foregoing policies are not applicable to your special line of goods, give the closest attention to finding out a really capable agent with good credentials and back him up generously.

Hardware Store Arrangement of Pumps, Axes, &c.

THE manner of arranging the stock and samples of Pumps, Axes, &c., in use by Scofield Company, Sturgeon Bay, Wis., is illustrated by the accompanying

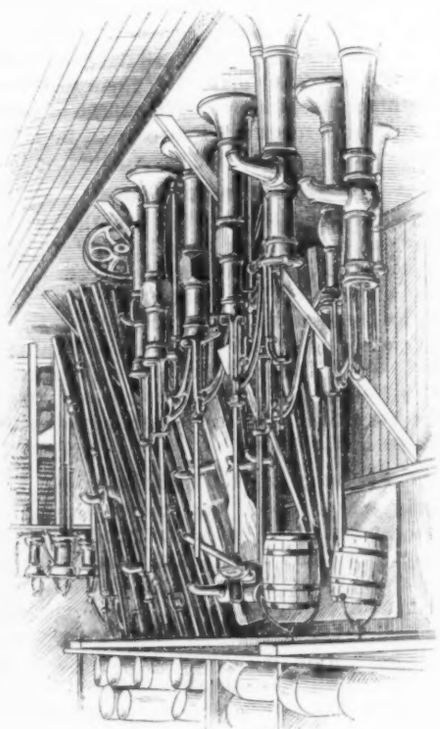


Fig 1.—Arrangement of Pumps.

cuts. In the foreground of Fig. 1 Iron Pumps are shown standing on a platform. Back of these are Wood

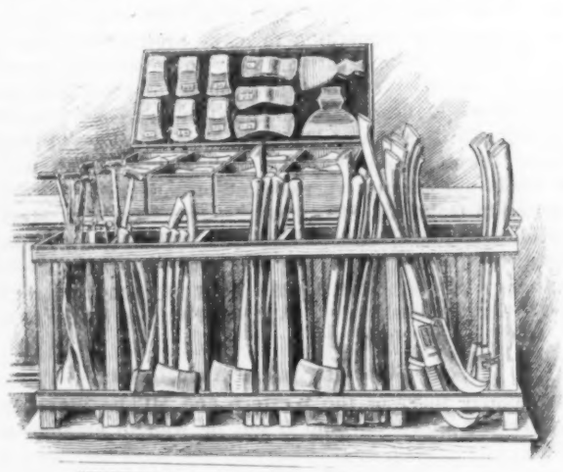


Fig 2.—Samples and Stock of Axes.

Stock Pumps, and further back are set lengths. The hanging shelf does not extend over the entire length of the platform, thus permitting the long Pumps to stand against the wall. Beyond the long Pumps is a rack containing Drive Well Points and extra Pump Handles. On top of this rack are placed Pitcher Spout Pumps.

Fig. 2 shows Axes in original boxes resting on a counter in front of shelving. The sample board is supported at an angle by a brace, attached to an upright, fastened to the back of the counter. The board is 18 x 45 inches in size, covered with black velvet. Around the edge of the board is 1½-inch door stop molding painted a bright vermillion. The effect is very striking. The manner of attaching the sample board leaves the full width of the counter available for the open boxes of Axes. The rack extends about 12 inches in front of the counter and is also painted a bright vermillion. It contains handled Axes, Hay Knives and Busb Hooks, making a convenient and showy display of these rather awkward tools.

Lee-Glass-Andreesen Company's New Building.

LEE-GLASS-ANDREESEN HARDWARE COMPANY, Omaha, Neb., have just completed a fine new building for their use at the northeast corner of Ninth and Harney streets, Omaha, in the center of what is known as the new wholesale district. The building covers an area 132 feet square with a double track of the Burlington Railway in the alley on the north. The structure was built by and is the property of H. J. Lee, president of the company, Mr. Lee being a pioneer in the history of Nebraska and prominent in public matters concerning that State. The design of the building is the Italian Renaissance. The building has six stories and basement, the latter having a hight of 11 feet in the clear, the first story being nearly 17 feet high, while the second story is 14 feet in the clear; the third, fourth and fifth stories averaging 12 feet. The floor and timber construction throughout is of the most advanced type of mill construction. The posts, girders and floor beams are of yellow pine and were cut and dressed for this particular building. The flooring throughout is double; the finishing flooring of all the floors excepting the office is quarter-sawed Southern yellow pine, the finishing flooring in office being of selected pattern maple. In the basement is a thick cement floor having a granite finished surface. The east portion of the first-story floor is practically on the level of the car floors. The floor girders are trussed with iron, making a floor which will sustain a load of 1500 pounds per square foot. On this floor will be placed the heavy Barbed Wire and Flat Iron stock. Particular attention has been given by the architects to the prevention of dry rot, various precautions having been taken to avoid it. The masonry throughout is heavier than is usually employed, a heavy brick division wall being carried through all stories and forming a fire wall. None but the hardest sewer brick has been used in any part of the structure. Plate glass is used in the windows of the first story and the building is provided with three high grade Otis electric freight elevators.

Important Cutlery Auction Sale.

E. BISSELL & CO., 12 Murray street, New York, wholesale autioneers, announce an important auction sale of Cutlery, Silver Plated Ware, &c., for Wednesday and Thursday, February 13 and 14, at 10 o'clock a.m. each day. They will offer large quantities of Table Knives and Forks in discarded numbers of the manufacture of Lamson & Goodnow Mfg. Company, Meriden Cutlery Company, Landers, Frary & Clark, Goodell Company and J. Russell Cutlery Company; also several hundred pairs of Carvers, Butcher, Bread and Kitchen Knives, 3000 dozen of Silver Plated Flat Ware of the stock of A. F. Towle & Son Company and other goods of this class.

Magladery Bros. have succeeded M. Shalloe, Parkhill, Ont., dealer in Hardware, Stoves, Tinware, &c. The new firm have largely increased the stock formerly carried and made some improvements in the store.

February in the Hardware Store.

The question as to the work which belongs to February is touched upon in the following contributions. The description of methods thus given will be suggestive to Hardware merchants. By enterprise and energy there is little doubt that February may be made a very useful month, though largely in the way of preparation for the trade of the coming season. We invite further advices on this practical subject, the discussion of which will help in the cultivation of good business methods.

WHAT TO DO IN FEBRUARY.

BY H. C. W.

FEBRUARY is a hard month in which to lay down lines and rules to follow systematically. There is a little of everything to do, and the little runs into a great deal of importance before the month is ended. It's an aftermath, a lapping over of nearly all the work laid out for January, with a little entirely new added. The going into new sets of books is done with; the small and short accounts are, or should be, largely weeded out and collected. The leaks of the last year have been at least partially found and are on the way to being stopped or lessened. The dead stock sale is being pushed forward and the general cleaning up is well done with. Do we ever realize that we are at this season of the year like the dry goods man, full of stocks for

Remnants and Remnant Sales?

There is the Belting stock—the short ends and pieces, from 2 to 12 or 15 feet. We had one of the boys carefully measure them up, marking each piece and entering same on a memorandum. These were all sent back to the factory last February (and they will be accepted at their value direct or added to new rolls of stock), bringing us a credit slip from the manufacturer of $53 and odd cents.

There are remnants of Floor Oil Cloth, Table Oil Cloth, Ducking, Linoleum, Screen Wire, Poultry Netting, Hardware Cloth and remnants in many other lines, all to be measured and marked, or if already done for purposes of inventory, to be brought forward, kept marked and pushed out of the front door; and February is the month of the year for such work.

Bins, Racks, &c.,

for all sorts of stock, suggest repairing of the old and the making of many new ones. There cannot be too many bins, rack and shelves in any Hardware store. There are Axes to be mounted and Axles to be matched up and tied in sets. The Bar Iron needs attention, and with it the Tool Steel rack. Brass and Copper Wire wants to be racked and numbered on the wall. Cast Fittings, Carriage and Machine Bolts and Lag Screws must all be taken care of for another year. Circular Saws, Cross Cut Saws and Clothes Wringers must have a stand or they will grow worse with handling. Dry Colors and Loose Emery must have tin or wooden cases. Hinges of all kinds should have their various compartments, and so on through the line—Steel Goods, Scythes, Shovels, &c., and everything that stands up, falls down or mixes. Every betterment of stock in this way tends closer toward the silent salesman and the disposal of goods with the least effort.

Keeping at Collections

through the month of February, and until the work is as nearly done as ever it is, becomes a matter of necessity, in the light of the fact that without the most persistent and systematic attention throughout he year accounts will bunch and pile up—neglected! After all statements for January—covering every account on the books—are sent out and the usual responses up to the 10th of the month are in, it is a capital plan to take long statement sheets and from the balance sheet draw off every unpaid account, with ledger page and amount. Then start the best collector in the house out for those he can reach. He will collect money. Those who turn him down must set a date for payment and that date must be religiously observed. If set ahead again, follow it up and keep on. In the meantime, those he cannot reach you can work on with stenographer and personal, strong but persuasive and well worded letters, using city and country directory. It is wonderful the results that come from work of this kind, pursued faithfully through January and February.

There is Money in Renovating

and cleaning up. February is a good month in which to find it. How many Linseed Oil barrels have you in the cellar at 85 cents each? How many Turpentine barrels which cost you from 90 cents to $1 and Lubricating Oil barrels from 50 to 60 cents? The common shipping barrels, such as Lantern Globes come in, bring 10 cents each. Your packing boxes all bring from 5 to 10 cents each. Your Wrought Scrap is worth at least 75 cents to $1 per hundredweight. Brass and Copper Scrap on hand is valuable. There is a pile of "warranted goods"—Axes, Hammers, Hatchets, Saws, &c.—not charged back or shipped to headquarters. They all take up room, they are of value to the other man. Get them ready, ship and sell everything named above. We expect to realize $150 to $175 during the month of February in these odds and ends, and count it nearly all clear gain.

Resampling of Goods

is a splendid occupation for this month, and a clever young boy can do the work when laid out for him. You have changed many lines during the year—old samples are partly knocked off and disarranged. In many cases goods in the boxes are not what they are on the outside, and the resampling should mean, too, where necessary, remarking. Table Cutlery should have attention and the Razor and Pocket Knife samples; so, too, the Scissor stock, the Tool stock, and any other bright, polished or plated goods in the house.

February for Early Shipments,

particularly season goods and those with a summer dating, means lots of dollars to the good, ahead of your competitors. The day is at hand when Refrigerators and Ice Cream Freezers sell nearly all the year round, and they cannot get in too early. So also with the bulk Seed stock (it takes a long time to arrange it properly), and much hard work is connected therewith. And the complete line of Steel Goods should be on hand before March 1. The first premature warm weather catches you otherwise short of Hoes, Rakes, Spades, Floral Sets, &c., barring the fact, too, that it takes time to mark and arrange the stock for display and for sale.

Kill the Dull Season

this year by using a part of February to decide on and select new lines of goods that will keep every man in the house doing something to make profit every day in the year. It is comparatively easy to have every month a busy one, and the added investment to secure it is not a heavy one if these lines are added by degrees. I would suggest small stocks of Tinware, Wooden Ware, Plated Silver Ware, cheap Watches, Box Paints, small lines of Tools not usually carried but often asked for, specialties in Gold and Silver Paints, Furniture and Metal Polishes, Liquid Glues and Cements, and a hundred good novelties that leave a clear 100 per cent. profit every time they go out of the house. They pay rent and clerk hire; they are cash sales. A 20-cent sale is better than a $2.50 keg of Nails.

Your State Hardware Association,

particularly those of the Western and Middle States, is a February affair. Would it not be well to arrange to attend this month, particularly if you have not been a member or have not attended heretofore?

It's a good month, too, to add one or two trade journals as a part of your stock. There is no other commodity entering your doors of more value and with possibilities of more profit for you than the adding or renew-

ing of your subscription. February is as valuable to us, perhaps, as any other month in the year—if we use ordinary efforts to make it so.

FEBRUARY BUYING.

Advices received from a large number of retailers indicate that among the lines commonly bought in February are the following:

Forks, Hoes, Rakes, &c.,
Refrigerators,
Wire Fencing,
Lawn Mowers,
Wire Cloth,
Poultry Netting,
Window Screens and Doors,
Freezers,
Axes.

These advices come from many States and reflect the methods of merchants in different circumstances, some of them doing a large and others a relatively small retail business.

Earlier Buying.

The correspondence also indicates the important fact that many merchants bought the goods in question in December or January. Of the three months, December, January and February, January leads in the number of retailers buying the lines mentioned above. While many in the trade recognize February as the proper time to buy these goods, the condition of the market and the probabilities of lower prices lead them frequently to deviate from their usual course. In some instances goods are bought a long time ahead of requirements, while under other circumstances they are not purchased until needed.

From Manufacturers or Jobbers?

The letters which have come to us are very interesting in the light they give on the question as to whether retailers buy these important lines from the manufacturers or from the jobbers:

FORKS, HOES, RAKES, &C.—These goods are purchased somewhat more frequently from jobbers than from manufacturers.

REFRIGERATORS.—On the other hand, manufacturers receive a much larger proportion of the orders for Refrigerators.

FENCING.—In Wire Fencing the proportion of retailers dealing with the jobbers is insignificant compared with those dealing directly with the manufacturers.

LAWN MOWERS.—According to the reports in hand more than three times as many retail merchants buy from the manufacturers as from the jobbers.

WIRE CLOTH, &C.—While orders for Wire Cloth and Poultry Netting are nearly equally distributed between manufacturers and jobbers, the manufacturers lead by a small percentage.

WINDOW SCREENS, &C.—In Window Screens and Doors the jobbers, on the other hand, lead.

FREEZERS.—The same remark applies to Freezers, in which the proportion of retailers buying from the jobbers is somewhat larger than those dealing direct with the manufacturers.

STOVES &C.—Stoves and Stove Goods are almost exclusively bought of the manufacturers.

AXES.—The large proportion of the retail trade buying Axes from the manufacturers is somewhat surprising.

Without going into further detail the practice of the trade as reflected by the several hundred retail houses from whom we have heard may thus be summarized:

PRINCIPALLY FROM MANUFACTURERS.—In the following lines many more retailers buy from manufacturers than from jobbers:

Wire Cloth and Poultry Netting,
Stoves,
Axes.
Refrigerators,
Wire Fencing,
Lawn Mowers,

MORE FREQUENTLY FROM JOBBERS.—In the following lines, on the other hand, the larger proportion buy from jobbers, though in several cases the orders are apparently about evenly divided:

Forks, Hoes, &c.,
Window Screens,
Ice Cream Freezers.

THE HARDWARE STORE IN FEBRUARY.

BY AN INDIANA MERCHANT.

With the first of February we usually have a sense of relief that January is safely over, with its dull trade and somewhat disagreeable tasks.

Last Year's Business.

The inventory is over and figured up, and we welcome the absence of the dust with which we had become familiar. The work and worry of the year are represented by a satisfactory balance sheet, so that we feel assured that the principles upon which we have been doing business are, in the main, correct.

The Passing of Old Friends.

One result of inventorying is the bringing to light undesirable stock, which is better in the wide, wide world than confined within the narrow limits of store walls. The articles we consider undesirable this year are as follows:

Some tarnished silver plated Spoons and Forks.
Five rusted Pocket Knives.
Six sets of unsalable Carvers.
Five 5 and 6 pound rusted Sad Irons.
Balance of Lamps.
Nine no good Potato Parers.
A shop worn Washing Machine.
Three Wringers.
Odds and ends of Enameled Ware.
Nine combination Tools (Tack Hammer, Claw, Stove Lid Lifter, Screw Driver, &c.).

The smaller articles we have put on a bargain counter, with the larger ones grouped sympathetically about them. An advertisement of a bargain Hardware sale has moved quite a lot of the stuff, but some of the stickers need a lower price to push them out.

Stove Sale.

We have advertised a clearing out sale of Heating Stoves at a 25 per cent. reduction in price, to begin on February 1, as we will soon need the room for spring and summer stock and do not believe in carrying over season goods.

Goods Already Ordered.

We order in January or before (some of them in November, but most of them in December) the following lines, mostly season goods:

Steel Goods
Screen Wire Cloth.
Poultry Netting.
Screen Doors.
Window Screens.
Sash.
Doors.
Builders' Hardware.
Mechanics' Tools.
Glass.

We like to get all of these goods off of our mind, if possible, by February 1.

Fortunate Buying.

We were lucky in getting our order for Glass and Sash in before the advance in the price of Glass, and we waited long enough to get a low price on Screen Wire Cloth.

February Ordering.

First in order comes the general assorting up of stock which the inventory memorandum shows we are short on; also ordering parts of articles which have been sold separate or lost, to put the goods in salable shape. Early this month we will decide what line of Refrigerators we shall handle and place our order for them. Paints and Turpentine will be ordered this month, and probably Linseed Oil. We are not, however, well enough satisfied with the Oil market to put in a stock order. Barb Wire we are ordering, also a carload of Nails, for March delivery. We have decided to handle the same line of Bicycles as we have during the past two years, and are ready to place our orders for them. Garden Hose and accompaniments are also to be ordered this month.

Cooking Stoves.

During January we looked over the different lines of Gasoline and Oil Stoves, listened to the eloquent stories of advantage of each, and as a result see no reason for changing to other goods than we have been selling. These we will order at once and get samples on the floor. We are, however, dissatisfied with our line of Cook Stoves—

our Steel Ranges are all right—but have not decided which of two rival makes to take up. This matter we will have to decide soon.

Quotations to Be Obtained.

Goods which we usually get quotations on in February include Lawn Mowers, Ice Cream Freezers, Binder Twine and Paris Green. We also look into other lines that may be advantageous to buy because of low prices. We carried over both Twine and Green enough to supply early demands, and see nothing to be gained by placing early orders for either of them this year. On many lines of any importance we get quotations from both manufacturers and jobbers. Manufacturers can usually make the most attractive prices, but sometimes lower figures can be obtained on some lines from jobbers. This is often the case on a rising market, when jobbers are apt to sell at the old prices, as long as their stock lasts, rather than charge the advance. But on many goods, when we buy in good lots from the manufacturer, we can often get as low prices as the jobbers can, and with delivery to our town.

Our Advertising.

We do not remember whether you know that we put 2 per cent. of our gross sales into advertising every year. For the greater part of February we shall use our advertising space in the local papers to bring to the attention of the public our stock of electrical goods and supplies, which have just been received. We are beginning in a small way with this new line—Electric Bells, Push Buttons, Wire, Batteries, &c. We will increase our stock and include a larger variety of goods as business in this direction grows.

Farmers' Catalogue.

Increased sales have given us more money to use in this direction this year, and as we do not believe we can increase our line of newspaper advertising with advantage to ourselves, we decided to issue an illustrated catalogue for distribution among our farmer friends. We had anticipated that we could do this, so in December and January we got cuts from jobbers and manufacturers, also some of *The Iron Age* cuts. While the inventory was being figured up we worked on the catalogue and now have it ready for the printer, except a few finishing touches. We will make a modest commencement in this new venture—a book of 12 pages as our first attempt in this direction.

FEBRUARY PLANS.

An enterprising and successful Western house refer to the month of February as the best month in the year to get everything in good shape for trade, especially in view of the fact that there is not usually much business doing. Among the special work laid out for this month the following particulars are mentioned:

1. Making a special effort in advertising spring goods by taking the names of all persons to whom they might be able to sell goods in the towns within their territory and sending special matter that will interest them in their respective lines.

2. In their Fence department they have already employed several men to canvass the farmers, going from house to house, and have been very successful in securing a large number of orders. They will press this part of the work harder during the month of February.

3. They are arranging to do a similar work in the line of Agricultural Implements.

4. In addition to this special work they will spend time in posting their clerks as to prices and changes in the markets, and changes in lines of goods, &c., fitting them for better service in the spring. They refer to the various changes that have taken place in the markets of late as making the average Hardware clerk feel that he knows nothing

D. E. Mead has admitted C. Beckwith to partnership in his Hardware business in Lone Rock, Wis.

Seventh Annual Sportsmen's Show.

THE seventh annual Sportsmen's Show, under the auspices of the National Sportsmen's Association, will be given at Madison Square Garden, New York, commencing March 2 and continuing two weeks. The management announce that it will be replete with many new and attractive features and on a grander scale than heretofore attempted. In the amphitheater will be the land of Hiawatha, the home of the Ojibway Indians, of whom there will be a large number present. They will inhabit an island situated in a lake, on which the Indian dances will be performed and their home life portrayed in detail. The lake will be larger than that in previous shows, and will contain 1500 live trout, weighing from 2 to 5 pounds, and sportsmen will have an opportunity to enjoy a little fishing. The State of Maine will display fine specimens of the game animals found in the Maine woods, and about 80 guides and woodsmen will be in attendance, the exhibit being under the supervision of C. C. Nichols, State Game Warden. The Adirondack Guides' Association will exhibit live game animals, game fish, log cabins and leantos and new features which the guides will introduce of life in the woods. In the Canadian exhibit there will be beaver dams with live beavers and Indians and guides, who will bring relics of their native woods. There will be a number of Rifle, Revolver and Pistol contests. Spaces for the exhibit of Sportsmen's Supplies, Boats, Launches, Golf Goods, Fishing Tackle, Guns and Ammunition will be reserved in the gallery, the ground floor being entirely taken up with the live game park, the lake and some of the features described above.

Allston Foundry Company.

BARNEY & REED MFG. COMPANY, formerly at 85 Water street, Boston, sole manufacturers of the patent Walda Sectional Sash Weights and the Ansley Bell Top Sash Weights, have consolidated with the Composite Brake Shoe Company and will continue business under the style of Allston Foundry Company, with offices at 620 Atlantic avenue, Boston, and works at Allston Station, Boston. The Waldo Sectional Sash Weights have been on the market for several seasons and we are advised that they are in use in many prominent large buildings, including the great terminal station in Boston. Referring to the advantages of this Sectional Weight the manufacturers state that the Weights are adjustable, permitting any number of pounds to be added to or taken off until the perfect number is secured. They require uniform pockets and 10 inches is sufficient for the longest and heaviest sashes, thus overcoming the difficulties arising from the use of long one-piece Weights. The Weights are so adjusted and attached that they cannot get out of adjustment and interfere with the Sash. They do away with the use of Lead Weights entirely, and are carried by Hardware dealers, who with one-sixth the stock required in one-piece Weights can fill any order. The Weights are crated 100 pounds in a box and both are plainly marked. The Allston Foundry Company will also manufacture the Ansley Bell Top Single Piece Sash Weights, which are described as an improvement over the old style single piece Weight, being of practical design, skillfully manufactured and convenient to handle. By this consolidation the Allston Foundry Company have acquired the patents that cover the use of cork for frictional purposes in combination with iron and other materials, such as the Compo Brake Shoes for railway cars and all kinds of vehicles, including automobiles and fire apparatus. They also make a special Shoe for use on rubber tires, for which cork is especially adapted. Being elastic and resilient it rejects all sand and grit and will not score or tear the rubber. These Brake Shoes are used very generally in railway service, especially in New England. They are also coming into use on automobiles, fire apparatus and heavy wagons. Another important field has lately been developed by one of the largest manufacturing establishments in New England—viz., cork inserted in the face of clutches in place of leather, for use on looms, from which, we are advised, remarkable results are being obtained.

Third Annual Convention of the Pacific Retail Hardware Association.

THE third annual convention of the Pacific Retail Hardware Association was held at Woodland, Cal., on January 16 and 17. As is a custom in the annual conventions of the association, the first day was devoted to executive work, in which all of the members participated.

On the second day the representatives of the manufacturers and jobbers of the coast were invited to join with the association and discuss jointly matters pertaining to the trade, and review the deliberations of the executive session.

Trade Questions Discussed.

The meeting was a notable one, not only in the number and character of the attendance, but in the earnest and practical way in which trade questions were considered. Apart from the routine business of the association a number of important subjects were brought to the attention of the convention, among which were the following, fuller reference to which will be found in the detailed report given below:

Friendliness in trade;

The occasional necessity for trade warfare;

Local trade excursions in the interest of department stores;

Agreement with Wagon manufacturers and jobbers to protect retailers' interests;

The question of classification of blacksmith shops and boiler and machine shops;

The classification of mining companies who have stores;

Case and cartage charges by jobbers;

Differentials to retail trade in price of Pipe, Shovels, Bolts, &c.;

Relations with Interstate Retail Hardware Dealers' Association;

Recommendation of THE IRON AGE *to the members of the association;*

Competition of jobbers in the Wagon and Implement trade;

Opposition to the Pettigrew Parcels Post bill;

Effect of combinations upon the retailers;

Relations between jobbers and retailers.

EXECUTIVE SESSION.

The convention was called to order by the president, John C. White, and upon the roll being called the following firms and members responded:

Adkins & Drane, Red Bluff, Cal.
R. M. Beebee, Gridley, Cal.
Bills & Putnam, Oroville, Cal.
Billiou & Applegate, Saint John, Cal.
H. H. Buhring, Auburn, Cal.
J. P. Burbank, Anderson, Cal.
J. E. Boorman, Marysville, Cal.
R. B. Cranston, Woodland, Cal.
Ed. G. Carter, Cottonwood, Cal.
W. M. Doty, Biggs, Cal.
M. Diggs, Woodland, Cal.
Denny, Bar & Parker Company, Scott Valley, Cal.
Elam Biggs Hardware Company, Grass Valley, Cal.
Eppinger & Co., Dixon, Cal.
Estate Geo. W. Freeman, Willows, Cal.
J. Grover, Colusa, Cal.
B. P. Grover, Williams, Cal.
T. B. Gibson, Woodland, Cal.
Hampton Hardware Company, Marysville, Cal.
L. L. Hubbell, Chico, Cal.
Hubbard, Earll & Co., Chico, Cal.
A. L. Nichols, Chico, Cal.
Robert J. Hancock, Auburn, Cal.
Hochheimer & Co., Germantown, Cal.
John Hanney, Lincoln, Cal.
L. O. Johnson, Arbuckle, Cal.
J. D. Johnson, Dixon, Cal.
R. O. Kimbrough, Sacramento, Cal.
Kaufman Bros., Corning, Cal.
H. D. Knight & Bro., Elk Creek, Cal.
J. P. Klemmer, Willows, Cal.
Legg & Shaw Company, Nevada City, Cal.
Lyon & Garrett Company, Red Bluff, Cal.
McCormick-Saeltzer Company, Redding, Cal.
J. A. McFeely, Chico, Cal.
Mitchell & Son, Colusa, Cal.
C. J. McBride, Lincoln, Cal.
R. Noell, Grass Valley, Cal.
Scribner & Murdock, Orland, Cal.
John L. Swank, Colusa, Cal.
John Simpson, Tehama, Cal.
A. C. Stagner, Wheatland, Cal.
James C. Gray, Oroville, Cal.
Geo. H. Knight, Adin, Cal.
A. Watkinson, Corning, Cal.
A. Young, Tulare, Cal.
L. N. Wood, Visalia, Cal.
H. G. Dorsch, Quincy, Cal.
W. E. Hawkins, Ager, Cal.
James Young, Redding, Cal.
H. A. Scribner, Durham, Cal.
Benj. Smith, Maxwell, Cal.
Redlick Bros., Bakersfield, Cal.
Lewald & Schlueter, Fresno, Cal.
Geo. E. Turner, Nevada City, Cal.
White, Cooley & Cutts, Marysville, Cal.
S. Sweet Company, Visalia, Cal.
M. Q. Meehan, Placerville, Cal.
Pioneer Hardware Store, Placerville, Cal.
Blake & Reed Company, Junction City, Cal.
Fred. A. Autenreith, Yreka, Cal.
Dinkelspiel Bros., Bakersfield, Cal.
Linder Hardware Company, Tulare, Cal.
Bakersfield Hardware Company, Bakersfield, Cal.
O. R. Cross & Co., Visalia, Cal.
Barrett-Hicks Company, Fresno, Cal.
Weill & Alexander, Bakersfield, Cal.
Donahoo, Emmons & Co., Fresno, Cal.
Turner Hardware Company, Modesto, Cal.
W. B. Wood & Son, Modesto, Cal.
Ruhl Stove & Hardware Company, Stockton, Cal.
E. F. Reichman & Co., Fort Jones, Cal.
Russell & Lefebvre, Redding, Cal.
Brady & Cassidy, Grass Valley, Cal.
Bird & Dinkelspeil, Collinsville, Cal.
Thomas Jones, Hornbrook, Cal.
E. B. Cavanaugh, Edgewood, Cal.

The president announced that on the arrival of the train which bore him into the city he had been formally presented with the key of the city of Woodland by T. B. Gibson, on behalf of the Mayor, and the freedom of the city was thereby extended to the entire membership of the association. The minutes of the last annual meeting were read and approved.

JOHN C. WHITE, President.

An invitation having been extended the San Francisco and Oakland Retail Hardware Dealers' Association to be present at the convention, their secretary advised that a delegation consisting of their president, O. F. Sites, and S. M. Armstrong, C. A. Bennett and M. M. Brown would be present representing their association. The president appointed a committee, consisting of M. Diggs, T. B. Gibson and J. Grover, to receive these gentlemen on their arrival at Woodland, and present them to the convention.

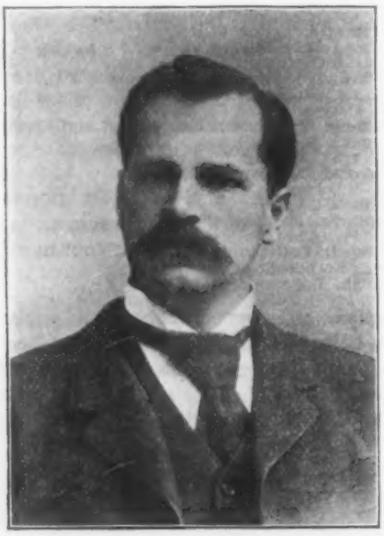
President John C. White delivered the following address:

President White's Address.

It is with great pleasure that I extend to you my greetings and congratulations on this—the third annual meeting of our association. The interest displayed by our members, as shown by the attendance, is substantial evidence of how these conventions are looked forward to, when we can meet together and enjoy the social delights of free intercourse with our friends, and discuss how we can help ourselves and each other, enabling us to carry back to our homes the new ideas and points acquired during our visit to the convention.

The value of business friendships needs no advocacy at my hands. The more we know each other and become acquainted, the better we are fitted to join together and act harmoniously for the benefit of all, and meetings such as these of men engaged in similar business pursuits are of great value from every standpoint.

The purpose of commercial organizations will be much underrated if looked upon as mercenary only or to maintain or get better prices or increase the volume of busi-



OSCAR C. SCHULZE, Vice-President.

ness. The fierce struggle for business sometimes leads men engaged in like occupations to distrust each other and take unfair means to promote trade, but it is to be hoped that one result of our meetings will be that we become better acquainted with each other and learn that our fellow members are just as honest as ourselves, and form friendships which we had not before.

TRADE WARFARE.

There are times, with traders as with nations, when war becomes almost necessary, but we all know what war means, and its definition by a great American soldier who was well acquainted with the subject, that "war is hell," should be borne in mind and make us pause and think of the results before we plunge into trade wars or conflicts. Exhaust every resource to reach proper and fair understandings. If you have an agreed price with each other in your local sphere of business, stick to it. Let the customer go. If this be mutual, you will get the next customer—both have made a sale and each a profit; but cut your price and your neighbor will cut the next time—each has made a sale but neither a profit. So, when an aggravating case or condition presents itself or when some one has misrepresented, call on him for explanation, and you will generally find that the explanation can be given; or if a mistake, due apology can be made, which will restore confidence. But if it is an unmistakable case, showing bad faith, declare war, and the hotter the war, the sooner peace follows.

PROSPERITY OF THE COAST.

By all reports and from what we can learn from all over California and the Pacific Coast, the season has been good so far for grain and fruit men. The other industries of the coast are in a prosperous condition, and the low prices for agricultural products we can reasonably hope will be advanced as freight becomes cheaper.

The first business to feel good times is the Hardware and Agricultral Implement trade. So let us take such action as we can to get our fair share of the results of prosperity that we are justly entitled to, and do all we can to promote confidence, uphold and spread abroad the fame of the great State of California, and assist the various organizations of business men who have certain specialties intrusted to them, such as forest preservation and irrigation problems and conservation of the waters of the State, and, above all, that of inducing a desirable immigration of industrious people to share with us the blessings which California is abundantly able to bestow on capital, energy and well directed labor.

FREEST DISCUSSION INVITED.

Your Executive Committee has prepared a programme of the various questions which will be brought up at the convention, but as I once saw in a country store the sign in a prominent place addressed to customers, "If you do not see what you want, ask for it," such ought to be the rule in our convention, and it is to be hoped that every member who has an idea he wishes to present will do so in the freest manner, for in a multitude of council there is wisdom, and that is what we want to arrive at.

In conclusion, I trust your deliberations will result in much good to all and be characterized by wisdom and harmony, that we shall return to our homes feeling that we have been well paid for the time we have spent at the convention by the broadening and deepening of our business relations, and that we shall all continue to give the Pacific Retail Hardware Association our earnest and loyal support as in the past.

The reports of the secretary and treasurer were read, and having been examined and approved were received and ordered to be placed on file.

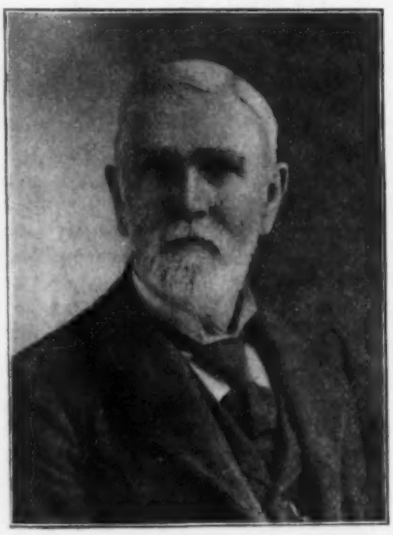
Next in order came the report of the Executive Committee, which was read by Vice-President Oscar C. Schulze, and was as follows:

Report of Executive Committee.

Your Executive Committee, after being appointed at the last annual meeting at Chico, met in San Francisco at the Lick House, February 20, 1900, and reviewed carefully the work delegated to it (at the annual meeting), taking into consideration the wishes and expressions of the members on the various subjects of discussion.

DEPARTMENT STORES AND THEIR LOCAL TRADE EXCURSIONS.

The question dealing with local trade excursions in the interest of department stores, being one of the subjects which your committee was intrusted with, was taken up, and, as the objects sought to be obtained would benefit the different trades outside of the Hard-



WM EARLL, Treasurer.

ware stores, it was considered only just that they should contribute toward the expense of the committee while engaged in the effort to discourage those excursions. The various stores in Woodland, Dixon and Marysville subscribed liberally, as shown in the secretary's report.

The outcome of our efforts in that direction is well known to all, and a detailed account of our work and

those who assisted us has been rendered to you in a circular dated May 7, 1900.

WAGON MANUFACTURERS AND JOBBERS

The next subject was our efforts to harmonize the views of the Wagon manufacturers and jobbers with those of our association. With that object your committee had several meetings with the jobbers and manufacturers, and eventually succeeded to a certain extent. A uniform list for Wagons was adopted, a full report

ROBERT W. BOYD, Secretary.

of which was made you in the circular letter of May 7, already referred to.

It was found, however, that owing to some conflicting interests, and to one of the leading manufacturer's agents not falling into line, a modification of the agreement was necessary. Your committee has since endeavored to rearrange matters in that direction, and entertains strong hopes that before another Wagon season comes around a satisfactory adjustment can be reached.

CLASSIFICATION OF PURCHASERS.

The question of the classification of purchasers occupied our attention on several occasions, and we were confronted with the following conditions: 1. The difference between an ordinary country blacksmith shop and the classification of boiler makers and machine shops, and we generally found that it was the desire of the jobber who was fortunate in having the bulk of the trade of that particular shop to raise the classification of the shop to the dignity of a machine or engineering shop. This was found to be done several times, and in some instances where a blacksmith, in addition to working up materials in the ordinary course of the blacksmith business, occasionally sold some iron, there was a disposition on the part of the jobber to raise him to a higher classification.

Another condition which presented itself to your committee, and on which it had to decide, was cases of mining companies and saw mill companies who kept small general stores in remote localities, principally for the supply of their own work people, being entitled to the high classification as purchasers, both for the goods they sold and for what they used as consumers in the saw mill and mining business.

These were very difficult questions to decide, and your committee, while not being able to lay down any general rule for such cases, always urged that a conservative instead of a liberal construction be applied; that each case could be taken up only on its individual merits and properly examined into and a decision rendered in accordance with the facts and conditions found.

CASE AND CARTAGE CHARGES.

The subject of case and cartage charges was on several occasions taken up, and the views entertained by this association were fully laid before the committee of jobbers and discussed. It was again pointed out that only on the smaller shipments were the charges considered unjust, and that we did not object to paying cartage, &c., on heavy staples, such as Iron, Nails, Barbed Wire, Horseshoes, &c.

On this point we were met by the arguments of the jobbers that few if any of them owned their own teams and drays, and that they had to pay so much per package or shipment instead of so much per ton on small shipments; that delays and waiting of drays at the railroad depots were great and the hours for receiving freight were limited, all of which tended to an increase of cost; that when late orders came in they had frequently to hire express wagons to make a shipment on time, as their drays had already started for the depot, and that they were not recouped for those expenses by the present mode of charging case and cartage. We were also assured by some that their case and cartage account showed a heavy loss.

Our reply to those arguments was that which has been so frequently urged at our meetings; that these expenses were a portion of the jobbers' legitimate expenses of doing business and ought to be regarded as such. Your committee has, therefore, made no progress in that direction.

DIFFERENTIALS.

We also took up the question of an extension of the differentials and established prices on several lines of goods, such as Pipe, Brass Goods, Shovels, Bolts, Nuts and Washers, &c. Little hope or comfort was extended to us in this direction, and the reasons given were that if any general agreement were reached on those lines of goods such as were popular and recognized as standard on the coast it would tend to the introduction of outside manufacturers' and generally inferior goods, and have a demoralizing effect on legitimate coast business.

At the same time your committee feels that even these goods can be made the subject of a better differential between the price at which they are sold to the regular dealers and to the consumers, and that considerable room still exists for trade improvement in that direction and ought to be a proper subject for discussion between the members of our association and the jobbers in our joint session.

Your committee hope that the arrangements it has

GEO. A. LEGG, Executive Committee.

made for the notification to members of changes in the market on staples have been satisfactory, as no complaints have been received on that score. Should we succeed in extending the lines of goods to which the differentials are applied such regular notification will be of proportionately greater value.

THE INTERSTATE ASSOCIATION.

Your committee has had some correspondence with the Interstate Retail Hardware Dealers' Association and

received an invitation to join that body, which was duly considered at one of our meetings; but the absence of proper information of the aims and objects of that association impelled us to decline to affiliate for the present, or until we could be better informed and learn whether the conditions affecting their interests could be applied to ours, or what common object we could have.

MEMBERSHIP.

By the secretary's report you will see that we have a membership of 77, being an increase of 20 during the past 12 months. It is with gratitude that we note the efforts of some of the traveling men to interest themselves in our behalf—notably S. F. Grissim, who has assiduously advocated our aims and objects and has greatly assisted in increasing our membership.

EXPRESSIONS OF THANKS.

We desire to extend our thanks to the jobbers and manufacturers who so ably assisted us in our efforts to discourage the practice of running trade excursions, and also for the uniformly courteous treatment received at their hands.

We also wish to extend our thanks to the various trade journals—notably *The Iron Age*—for the publicity given to our proceedings, and also for their generous act in supplying us with 1000 copies of the report of our

G. A. GUTMAN, Executive Committee.

second annual meeting, and we recommend them to your support and consideration.

In conclusion we have to congratulate our members on the few complaints which have been lodged with us, and which were of so light a nature that they were satisfactorily adjusted without any formality.

At our recent executive meeting, held in Sacramento, November 18, a committee, consisting of M. Diggs, T. B. Gibson and R. B. Cranston, was appointed to make provision for your reception and entertainment at this, our third annual meeting, and from the well-known ability of these gentlemen in that direction, and their hospitable and generous nature, we can safely commit you to their care.

Wagon and Implement Trade.

The question of the present unsettled condition of the Wagon and Implement trade, and what steps ought to be taken to harmonize the views of the manufacturers, jobbers and retailers, was taken up and discussed very freely and fully by the convention. The sentiment was expressed and universally concurred in that the retailers of these goods did not, as a rule, obtain their fair share of the profits, owing in a great measure to the competition of the jobbers as retailers. Some very radical resolutions were offered and considerable acrimony was shown at the action of some of the jobbers in showing an illiberal, grasping and selfish spirit without due consideration of the rights of the retailers. Eventually, however, the following resolution was offered by T. B. Gibson:

Resolved, That inasmuch as nearly every member has spoken on the subject, and the Executive Committee is thereby in a position to know fully the sentiments of the members, that the question be delegated to the incoming Executive Committee with full power to act.

Question of Differentials.

The convention then took up the question of the differentials as now existing, and the Executive Committee was fully instructed as to the enlargement and extension of the differentials desired on various lines of goods.

Suborganization.

A general discussion next took place on suborganization in towns and districts, which brought out a very interesting interchange of ideas as to respective methods of conducting a retail business.

San Francisco and Oakland Merchants.

The following resolution was offered by Vice-President Oscar C. Schulze:

Resolved, That inasmuch as the San Francisco and Oakland Retail Hardware Dealers' Association, by a committee of four, has visited our body at its annual meeting, at our invitation, and there signified a willingness to link its association with ours, for the purpose of increasing the scope of our usefulness, it being conceded that the aims and objects of both associations are identical; therefore be it

Resolved, That our Executive Committee meet with the Executive Committee of the San Francisco and Oakland Retail Hardware Dealers' Association, for the purpose of establishing a uniformity of action and work, and for formulating plans conducive to the mutual welfare of both associations.

The resolution was unanimously adopted.

The Parcels Post Bill.

G. A. Gutman directed the attention of the convention to the proposed bill now before Congress, known as the Pettigrew Parcels Post bill, when the following resolution was adopted:

Whereas, We are informed that a bill is at present before the Congress of the United States, known as the Pettigrew Parcels Post bill, whereby it is proposed to carry packages from any point to any point in the United States at a common rate of postage, and

Whereas, We believe the question of the enactment of this proposed law is one which is of vital interest to every legitimate jobbing house and manufacturing concern on the Pacific Coast, and of equal or greater interest to every legitimate retail dealer, not only on the Pacific Coast, but in every other section of the United States, and

Whereas, If the Government should proceed to carry packages at the rates mentioned, we believe it is plain to any one what the result would be in relation to purchases being made in this way by people all over the Pacific Coast, and,

Whereas, It is known that even now great quantities of all classes of goods are brought into Pacific Coast territory from the large department houses throughout the United States, and

Whereas, We believe it would prove extremely detrimental to every concern doing a legitimate business, be they manufacturers, jobbers or retailers, on the coast, if such a law be passed; therefore be it

Resolved, That this association in convention assembled agree unanimously with the preamble as herein set forth and that we are unanimously opposed to the enactment of any such law, and we recommend that each member of this association enter into correspondence at once with the Congressman of his district and Senator of the State, urging them to use their utmost endeavors to defeat the passage of the said Pettigrew Parcels Post bill as a matter of public policy.

And we further suggest that this association send a copy of this resolution to each of the representatives of California.

Consolidations.

The attention of the convention was drawn to the enormous combinations of capital, unprecedented in the history of manufacture and commerce, which are formed and which are forming every day, for the purpose of controlling absolutely the output of certain lines directly connected with the Hardware trade, and it was the feeling of the convention that it would lead to very unsatisfactory results to the individual dealer, and consequently to his customer.

The dealer would not make a commensurate or reasonable profit, and the tax collected thereby from the consumer would go to the great monopolies instead of being equitably divided. Letters were read from different organizations in the Middle West whose views point in the same direction.

Next Meeting.

The next order of business being the selection of a place for holding the fourth annual meeting, Nevada City, Cal., was chosen.

Election of Officers.

The former officers were re-elected for the ensuing year, as follows:

JOHN C. WHITE, president, Marysville, Cal.
OSCAR C. SCHULZE, vice-president, Dixon, Cal.
WLLIAM EARLL, treasurer, Chico, Cal.
ROBERT W. BOYD, secretary, Marysville, Cal.
G. A. GUTMAN, member Executive Committee, Germantown, Cal.
GEORGE A. LEGG, member Executive Committee, Nevada City, Cal.

AUDITING COMMITTEE.

An Auditing Committee of three was appointed, consisting of Elam Biggs of the Elam Biggs Hardware Company of Nevada City, John Simpson, Tehama, and J. F. Sersanous of the Estate of George W. Freeman of Willows, Cal.

Entertainment.

Before the convention adjourned for the day, T. B. Gibson stated that the ladies of Woodland were desirous of extending a reception to the members of the association present, which invitation was received and accepted with great pleasure by the association.

A delightful entertainment took place Wednesday evening in the spacious parlors of the Hotel Julian, which were handsomely decorated for the occasion. An enjoyable musical programme was rendered, dancing and cards were indulged in, and dainty refreshments were served by the ladies, thus ending a very pleasant day.

OPEN SESSION.

On assembling at 10 o'clock, Thursday, pursuant to invitation representatives of the jobbing interests of San Francisco and Sacramento were present, the following firms being represented, generally by their principals:

Dunham, Carrigan & Hayden Company, San Francisco.
Miller, Sloss & Scott, San Francisco.
Holbrook, Merrill & Stetson, San Francisco.
Baker & Hamilton, San Francisco.
W. W. Montague & Co., San Francisco.
Geo. H. Tay Company, San Francisco.
Crane Company, San Francisco.
Deere Implement Company, San Francisco.
Studebaker Bros. Mfg. Company, San Francisco.
D. M. Osborne & Co., San Francisco.
Oliver Chilled Plow Works, San Francisco.
Benicia Agricultural Works, Benicia.
Holbrook, Merrill & Stetson, Sacramento.
Baker & Hamilton, Sacramento.
Schaw, Ingram, Batcher & Co., Sacramento.
Thomson-Diggs Company, Sacramento.
Waterhouse & Lester, Sacramento.
California Moline Plow Company, Stockton.

There were also present William R. Wheeler and A. C. Rulofson of the Traffic Committee, Thomas P. Smith, secretary Pacific Coast Hardware and Metal Association, and many others representing the commercial and manufacturing interests of the Coast.

President White reviewed the results of the deliberations of the executive session, and the different subjects were freely discussed and a very edifying exchange of ideas took place on matters pertaining to the interests of both parties. It was very gratifying to learn that the manufacturers and producers of California were in active sympathy with the views of the association upon the many subjects of joint interest.

The question of where the rights of the retailer meet with those of the jobbers, being a subject of great importance, was freely ventilated, and the opinions entertained by the retail and wholesale associations were found to draw much closer together than was anticipated.

The intimation that the principal questions at issue between the jobbers and retailers had been delegated to the Executive Committee with full power to act in joint session with the Executive Committee of the various chapters of the Pacific Coast Hardware and Metal Association was received with much pleasure by all present.

This finished the business of the joint conference and the convention adjourned.

The Banquet.

The Entertainment Committee of Woodland invited the members of all the associations to meet with some of the prominent commercial and professional men of Woodland at a banquet, where upward of 200 persons sat down to a most elaborate repast. The Woodland String Band furnished selections during the evening. M. Diggs acted as toastmaster, and the responses, which were intellectual and humorous, were continued until a late hour, when "Auld Lang Syne" was sung, followed by "Home, Sweet Home," and a toast to the success of the meeting was drunk by all present with feelings of enthusiasm and nothing but words of praise for the splendid entertainment afforded.

William Connors Paint Mfg. Company.

IN this issue will be found an advertisement which contains a liberal offer by which any dealer may secure a stock of the Empire Prepared Paint, manufactured by the Wm. Connors Paint Mfg. Company, Troy, N. Y. They offer 50 gallons of this Paint, put up in regular assorted size cans and pails, all very neatly labeled, in gallons, ½ gallons, quarts and pints, for $45, and also agree to furnish a good supply of their up to date advertising matter. This offer is referred to as of interest to every dealer in Paints and Oils. The shades, it is stated, are the very latest and most durable for either inside or outside use on any surface. This house also manufacture a full line of Floor, Roof, Carriage and Wagon Paints, and are also grinders of fine colors, Umbers, Siennas, Ochers, White Lead and Zinc, Putty, Roofing Cement, Stove and Asbestos Furnace Cements. They will be pleased to send price-list covering their entire line to any one interested.

Janney, Semple, Hill & Co.'s Cycle Supply Catalogue.

JANNEY, SEMPLE, HILL & CO., Minneapolis, Minn., have just issued their "Encyclopedia Cycle Supplies" for the coming season, the catalogue containing 194 pages of a large and diversified line of Bicycles and Bicycle Supplies and Sundries. This house, who are wholesale dealers in Hardware and Iron, Sporting Goods, Guns, Ammunition, &c., carry a complete line of sundries and fittings, together with supplies and appliances for repair shops, at manufacturers' prices.

Humason & Beckley Mfg. Company's Catalogues.

HUMASON & BECKLEY MFG. COMPANY, New Britain, Conn., and 80 Chambers street, New York, have just issued two new catalogues illustrating and describing the numerous kinds of Hardware and Pocket Cutlery of their manufacture. One is a book of 106 pages, in which are shown such goods as Awning, Box, Cornice, Cotton, Gate, Hay, Meat and Screw Hooks, Bright Wire Goods, Butter and Cheese Triers, Bull Rings and Punches, Cattle Leaders, Cork Screws and a large line of fine Pocket Cutlery, the latter as-

sortment having been doubled since their last catalogue, and now covering 700 different numbers. The other catalogue contains 49 pages in pamphlet form, and is known as the Hardware Edition, containing goods of the same general character enumerated above.

Price-Lists, Circulars, &c.

GOODELL-PRATT COMPANY, Greenfield, Mass., have issued catalogue No. 5, containing 100 pages, illustrating their Mechanics' Tools. In addition to the goods regularly made by them there are 28 pages of new Tools, among which are Bench, Automatic and Gunsmiths' Screw Drivers, a Reciprocating Automatic Drill, a number of Automatic Drills and Punches, Hand and Breast Drills, Automatic Chain Drills, Drill Checks, Spoke Shaves, small Saw Arbors, Grinding Heads and Saddlers' Drive Punches.

COLLIER SHOVEL & STAMPING COMPANY, Washington, Ind.; Allerton-Clarke Company, 97 Chambers street, New York, general sales agents: Illustrated catalogue of Shovels, Spades, Scoops and Ditching Tools, including full lines of both Cleveland and Antrim patterns. The company state that their new plant for the manufacture of Shovels, &c., has been equipped with all modern improvements.

GENEVA TOOL COMPANY, Geneva, Ohio: A handsomely printed illustrated catalogue of hand Agricultural Tools, consisting of 96 pages, describing large assortments of various patterns of Hoes for all purposes, Rakes, Forks, Sugar Beet Tools, Scythes, Snaths, Revolving Hay Rakes, Turf Edgers, Dock and Thistle Diggers and goods of this character.

F. E. MYERS & BRO., Ashland, Ohio, have recently issued a number of circulars relating to their Domestic Pumps, Spray Pumps, Power Pumps, Hay Tools, Store Ladders, Stayon Door Hangers, Lawn Swings, Gate Hangers, &c. They will also be pleased to send a copy of their No. 35 catalogue illustrating their complete line to any applying for it.

NEW DEPARTURE BELL COMPANY, Bristol, Conn., for whom John H. Graham & Co., 113 Chambers street, New York, are selling agents: Illustrated catalogue of Door, Car and Fire Bells, Call, Tea and Office Bells, Automatic Counters, Cyclometers, Cycle Lamps, Coaster Brakes, Cycle Pumps and Guards, &c.

WALTER B. STEVENS & SON, 114 Chambers street, New York, and 412 Commerce street, Philadelphia: Illustrated catalogue and price-list No. 8 of Dog Furnishings manufactured by them. This is a very complete catalogue of 64 pages, containing a large number of new styles of Dog Collars, together with a large assortment of Dog Fittings, such as Harness, Bells, Leaders, Locks, Whips, Muzzles, Combs, Brushes and goods of this general description.

Trade Items.

THE LAWSON MFG. COMPANY, manufacturers of Spring Hinges and other Hardware Specialties, removed from Milwaukee, Wis., to 115 Lake street, Chicago, February 1. Their Milwaukee office has been closed.

THE firm of Lord, Witter & Park, Worcester, Mass., who manufacture the Lord Patent Saw Filer, have been succeeded by the Lord Mfg. Company, Incorporated. The new company will enlarge the plant and generally add to their facilities.

CLARK & COWLES, Plainville, Conn., manufacturers of Rivets, advise us that they have appointed Graham & Berwin, 7-9 Warren street, New York, agents for the jobbing trade in the New England, Middle and Western States.

THE GRAND CROSSING TACK COMPANY, Grand Crossing, Chicago, state that the report is absolutely untrue that they are negotiating for the purchase of the Rockford Tack Company's plant at Rockford, Ill., which has been idle for some time.

S. E. Wilson has purchased the Hardware stock of C. W. Ames, Chandler, S. Dak., and removed it to Bijou Hills.

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Cattaraugus Cutlery Company's Banquet.

THE annual banquet given by the Cattaraugus Cutlery Company, Little Valley, N. Y., to their employees was held on the 4th ult. It was the largest banquet in the history of the company, and was a most enjoyable occasion. Tint Champlin, secretary, acted as toastmaster, and in his address of welcome spoke in part as follows:

My friends, it is a great pleasure to welcome you here to-night and to take this opportunity to express to each one of you the thanks of the company for the able manner in which each of you have performed the tasks assigned you in the past, for we fully realize that the success of the company largely depends on the manner in which you turn out the goods, and the fact that our goods give universal satisfaction is good proof that you have done your work well. The wonderful success of our company we attribute to good management on the part of their officers, faithful work on the part of their operatives and untiring energy and push on the part of their traveling men. It is a well known fact that in the past few years our country has jumped to the foremost rank among the nations, and it is a fact, although perhaps not so well known, that the American Pocket Knife manufacturer has taken his place at the head of the manufacturers of Pocket Knives of the world. It is with pride that I speak of this achievement, and I can truthfully say to you that no company have contributed more toward bringing this result about than has ours.

For more than a hundred years the Government of these United States has each year advertised for samples to be submitted and prices to be made on very fine combination Knives for the use of Representatives in Congress, and each year these contracts have been awarded to old English firms. This matter has now been changed. Last year, for the first time, we entered in competition with these English firms, and I am pleased to say that we were awarded the contract, and we are now furnishing these fine combination goods to the Government. We are also furnishing Knives of this class to the State of New York, which in the past has used the higher class of German goods.

I am proud to say that we are an aggressive company, always looking for something new and always trying to lead our competitors in the race for the plaudits of the trade. It is a satisfaction to see that we are growing. Last year we had at our annual banquet, as you will remember, covers laid for 200, and this year we have covers for 300. You know the crowded condition of our factory, and yet we have not been able to produce enough goods, and I am glad to say to you that we have bought the large brick factory that formerly belonged to the Wilson Mfg. Company, and we now have a force of carpenters at work remodeling the inside of it, and shall very soon have a hundred men at work in that building. We have already completed a large finishing room, and have a force of finishers at work. We are preparing for the Pan-American Exposition, and shall have a large display of our goods there. We have been given a very fine location in the Manufactures and Liberal Arts Building, and are having a booth erected there that will do credit to our company. We shall have a hearty welcome for our employees and customers who may visit the exposition.

We are looking forward with pleasant anticipation to the future, feeling that we shall continue to merit the good will and patronage of the trade which has been so generously bestowed on us in the past, and we look to you to not only maintain the high reputation which we have established on our goods, but to improve on any point where there may be an opportunity to improve the looks or utility of the goods, and in closing let me impress on you the necessity of each one doing his work well. You remember the old saying, that a chain is only as strong as its weakest link, so a business is only as substantial as the weakest point in its management.

The toastmaster then introduced J. M. Hanford, who represents the company in Eastern New York and Pennsylvania. Mr. Hanford made a very pleasant speech, full of wit and humor, and was heartily applauded. He was followed by W. T. Corwith, who represents the company in Michigan, and by C. L. Wilson, who represents them in Central New York and in Pennsylvania and Vermont. H. J. Crissey, a stockholder of the company, and who is also general manager of the banking house of Crissey & Crissey, spoke next, and was followed by J. B. F. Champlin, president of the company. Mr. Champlin made a pleasant speech, and gave the salesmen some points worth their consideration. He also spoke of the time when it would have been a hard matter to have gotten 30 people together who were employed by the company, whereas he was now looking into the faces of 300. He attributed the great success of the company to three causes: Honest dealing with the customers of the company and with their employees; the continual desire to make only the best goods and maintain quality and the unfailing energy which had been put into the business by those connected with its management. H. P. Corwith, the company's representative in Illinois, was next called on, and was followed by W. A. Dunn, the representative of the company on the Pacific Coast, and W. C. Bushnell, superintendent of the factories.

Among other representatives present were the following: C. H. Pierson, representative for Wisconsin; A. F. Kelley, the New England representative; I. Henry Mott, who represents the company in Western New York and Western Pennsylvania, and J. B. Hooper, representative in Ohio and Indiana. Besides the above travelers the company have several others who found it impossible to be present.

The Joliet Wire Company's Fencing Plant.

IN *The Iron Age* for October 4, 1900, a description was given, with illustrations, of the Joliet Clip or Washer Field Fencing manufactured by the Joliet Wire Company, Joliet, Ill. At that time the company had just begun operations in the manufacture of this Fencing, but since then they have added many more machines and greatly improved their facilities, thus placing them in a position to more adequately meet the requirements of their trade. A recent visit to the plant disclosed a number of points relative to the process employed which will undoubtedly prove interesting to our readers.

The Fencing manufactured by this company has a rectangular mesh, the horizontal and stay wires crossing each other at right angles. At the points of contact the wires are connected by a steel clip or washer, ½ x 1¾ inches in size, which answers the double purpose of holding the wires together rigidly and making the Fencing more easily seen. In the manufacture of the Fencing No. 9 Wire is used for the top and bottom, No. 11 for the intermediate horizontal wires and No. 12 for the stays.

The raw material from which the Clips are made is a steel band, 3¼ inches in width, which is received from the rolling mills in coils of 100 feet in length. After being pickled these bands are run through a slitting machine, which slits them into six strips ½ inch wide, or just the width desired for the Clip. Slitting these strips leaves a trimming of ⅛ inch on each side of the band. The slitting is done by small steel rolls with perfectly square edges, which revolve over similar rolls. These rolls are spaced ½ inch apart, the top rolls moving between the lower ones and the latter between the upper ones. The band coming between these square edges is neatly sheared. As the strips and the trimmings leave the machine they are automatically reeled on separate spools. The trimmings being thus rolled into compact coils are easily handled and are sold for scrap. The strips are also more easily handled on spools when taken to the clip machine. This is a very ingenious special machine. As the strip is fed a piece of the required size, 1⅜ inches long, is cut off, two holes are punched in it and the corners are trimmed, all at one operation, after which an arm or plunger pushes the piece forward into position under a shaping head. When the second piece is being cut, punched and trimmed the first piece is at the same time pressed into U shape. A double operation is, therefore, constantly in progress on this machine. The clips as they pass from the machine are cleaned, then rumbled bright and afterward galvanized.

The weaving machines are likewise of ingenious design. They are strictly automatic. The completed Fencing is rolled on a drum at the bottom of the machine. The strand wires of the Fencing are first connected with this drum and are arranged vertically the proper distance apart. The stay wires are fed horizontally across

the strand wires, meeting a clip at each crossing point. The U shape of the clip enables it to straddle the strand wire, permitting the stay wire to pass through the holes of the clip and thus getting everything in proper position for the next impulse of the machine, which presses the clip nearly flat. This at the same time curves the wires connected by the clip, making a joint which is at once extremely rigid and yet susceptible of expansion and contraction.

The clips are fed into the proper place by a very neat device. A long trough or hopper is placed on the top of the machine, into which a large quantity of the clips is deposited. Above the hopper a shaft revolves which carries with it a number of projecting fingers. These pass through the mass of clips at every revolution and as they come up they bring with them a considerable number of clips mounted astride. The clips slide down the fingers and pass into position on each vertical wire, from which they slide one at a time to the proper place below to meet the stay wire.

The stay wire runs the entire distance across the width of the Fence, is cut by the machine to the proper length, and the ends are bent over the clip on the top and bottom wires at the same time that the intermediate clips are pressed. The ends of these stay wires are the portions of the entire Fencing which are left ungalvanized, no other portions of it being exposed to the weather. The position of the clip is also such that it will practically retain no moisture.

The present capacity of the plant, running single turn, is 10 miles per day of Fence with stays 12 inches apart, or 20 miles per day, running double turn. It is expected that this will soon be exceeded.

The company have a fine location and a plant which has been specially built for their purposes. The main building is a substantial steel structure with a steel truss roof and covers a ground space of 60 x 210 feet. The property comprises 5 acres and is located on the Rock Island Railroad at Rockdale, a suburb of Joliet. Ample room has thus been provided for the expansion of manufacturing facilities as the business of the company may require. A side track runs through the company's property, with a shipping platform the full length of the main building. The executive officers of the company are as follows: President, C. E. Robinson, and secretary, Col. Fred. Bennitt.

Farwell, Ozmun, Kirk & Co.'s Catalogue.

FARWELL, OZMUN, KIRK & CO., St. Paul, Minn., have just issued, and have now ready for distribution to the trade, an illustrated and descriptive catalogue of the goods they deal in. This book contains 1311 pages, each 12½ x 10 inches, and weighs 6 pounds. In it are shown complete lines of Hardware, Cutlery, Bicycles, Guns and Sporting Goods, House Furnishing Goods, Metals and Tinners' Supplies, Butchers' Tools and Supplies, Paints and Oils, &c. Wherever possible reduced cuts have been used, so as to make the volume convenient to handle. It has been the aim of the compilers to make this book especially convenient for the retail merchant, particular attention being given to various details, especially the size and weight of packages, &c. A feature of the catalogue is a handy compilation of the Western Classification, of articles in the Hardware line, in less than carloads, which is arranged alphabetically and bound in the back part of the book, so that the retailer can tell at a glance how the different articles in Hardware are classified as to freight. There are also ten pages of what is alluded to as useful information, containing practical matter for retailers. The catalogue bears evidence of careful compilation, satisfactorily represents the large line of goods to which it is devoted and will doubtless be appreciated by the customers of the house.

Kelley & Ferry have succeeded A. D. Kelley in the Hardware, Stove, Farm Implement and Plumbing and Steam Fitting business in Wheaton, Ill.

Among the Hardware Trade.

Fred. D. Wolt has purchased the Hardware and Farm Implement business of J. A. Burton, Gering, Neb.

Thomas Thompson has succeeded Bjorkblad & Thompson, dealers in Hardware, Tinware, Stoves, &c., Sisseton, S. D.

Ralph Moore has succeeded J. N. Goff in the Hardware and Stove business in Stillwater, O. T.

Hayden & Reagan are successors to Hayden & Tompsett, Hardware, Stoves, Buggies, Wagons, Plumbing, Agricultural Implements, &c., Cassapolis, Mich., William Reagan having purchased Mr. Tompsett's interest.

E. Jones has lately opened up at Tillamook, Ore., handling a line embracing general Hardware, Stoves, Iron and Steel, Sash, Doors, &c.

Martin Sauer has succeeded Sauer Bros., Hardware and Farm Implement dealers, Ida Grove, Iowa.

N. O. Wolcott has succeeded Wolcott Bros. in the Hardware, Farm Implement and furniture business, at Vernon, Ill., and continues at the same stand.

Maywood Mercantile Company, Corning, Cal., have purchased the Hardware business of A. Watkinson of that place.

Frank Pierce of Monterey, Cal., has lately moved his Hardware and Stove business to a large new building.

E. W. Hackman Hardware Company are successors to C. H. Vincent, at Sioux Falls, S. D.

J. E. Hibbard has sold out his Hardware and Tinware business in Utica, Neb., to O. J. Colman.

Barstow, Sikes & Brown have succeeded B. W. Barstow & Co., in the Hardware, Stove, Farm Implement and Sporting Goods business in Manilla, Iowa.

H. J. Bohlman, Berlin, Neb., has admitted a partner in his Hardware business, and the style is now Bohlman & Hillman.

G. H. Burnett Company, St. John, N. B., have sold out to A. M. Rowan.

The wholesale Hardware, Machinery and lumber firm of Roy & Titcomb, Nogales, Ariz., have incorporated.

Hargis & Wachtman have succeeded the Western Hardware Company, Llano, Texas.

Wood Hardware Company, Whitehall, N. Y., have been incorporated with a capital of $10,000. The company will conduct a wholesale and retail business in Hardware, Stoves, crockery, furniture, &c.

James H. Latrom, dealer in Shelf and Heavy Hardware, Agricultural Implements, Tinware, &c., Eagle, Neb., has just completed and moved into a new building, 20 x 111 feet.

Hener & Brucher have succeeded F. W. Hener in the Hardware, Stove and Agricultral Implement business in Kellogg, Minn.

Holley-Brooks Hardware Company, Paris, Texas, have been incorporated with a capital stock of $50,000, to conduct the wholesale and retail business in Hardware, Stoves and Tinware, Agricultural Implements, &c. They occupy a handsome store, 51 x 216 feet in dimensions.

Gipson & Teague have succeeded E. Gipson & Co. in the Hardware and furniture business in Quinlan, Texas.

J. W. Shupe & Son have succeeded to the Hardware business formerly conducted by N. B. Munch, Lacona, Iowa.

Neal Hardware Company, P. H. Neal, proprietor, have purchased the business of W. M. Parker & Co., Reidsville, N. C.

John C. McGowan, a veteran Hardware merchant of West Branch, Mich., died on the 19th ult. The business is being continued by Mr. McGowan's oldest son, Ed. H. McGowan.

Terry & Estes have succeeded Terry & Holland, Hardware and general merchants, Roane, Texas.

The Hardware store of Christensen & Shaw, Ballard, Wash., was robbed of a quantity of Revolvers, Pocket Knives and Razors a short time since. This firm have lately taken possession of new quarters and have considerably increased the stock formerly carried.

The Hardware firm of Maschoe & McGuire, Chandler, O. T., have dissolved. C. D. McGuire is continuing under his own name.

The Van Winkle Hardware & Implement Company, Roff, I. T., have been incorporated with a capital stock of $10,000, to carry on the wholesale and retail business in Shelf and Heavy Hardware, Stoves and Agricultural Implements.

J. A. Boggs has purchased the general Hardware, Stove and Agricultural Implement business of Cannell Bros., Crab Orchard, Neb.

W. B. Smith has opened up a new wholesale stock of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c., at Ridgley, Mo.

Monnett & Hamilton are successors to J. W. Stevens, Dayton, Wash., dealer in Shelf Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c.

Cook Bros., Akron, Mich., will erect a brick building 50 x 100 feet, two stories and basement. The second floor will be used for Buggies and Bicycles.

L. S. Hougen has disposed of his Hardware business in Wilmot, S. D., to John Atkinson.

William Moore, dealer in Hardware, Stoves and Tinware, Detroit, Mich., will move to his new building about February 1. This will give him much needed additional room and place him in a position to look after his growing trade.

F. M. McGee & Co., Hardware and Farm Implement merchants, St. Edwards, Neb., have been succeeded by Buchtel & Rich.

Howard Lamberton has succeeded Weisgerber & Lamberton in the Hardware, Stove and Agricultural Implement business in St. Peter, Minn.

A. E. Emerson has purchased the Hardware, Stove, Agricultural Implement and Sporting Goods business of O. E. Ballou, Rowan, Iowa.

Chas. H. Gile has purchased the Hardware, Farm Implement and Harness business formerly conducted by H. O. Amundson at Clear Lake, S. D.

U. G. Fowler & Co. are successors to D. W. Smith in the Hardware, Stove and Sporting Goods business at Huron, S. D.

W. S. Carrell has bought out the Coats Hardware Company at Choctaw, O. T., and will continue at the old stand.

H. C. Bauman, Rock Valley, Iowa, has disposed of his Agricultural Implement department to Hoeven & Speelman, and will hereafter confine his attention to the Hardware line.

Elgin Hardware Company, Elgin, Texas, have been incorporated with a capital stock of $10,000, paid in. The incorporators are I. A. Preuitt, G. W. Preuitt and A. H. Davis. The company will deal in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, &c.

Theo. Woepking has purchased the Hardware, Stove and Tinware business of William Woepking at Burlington, Iowa.

Barstow & Perrin have purchased the Hardware, Stove and Farm Implement stock of J. S. Spooner & Co., Sargent, Neb. The firm are building a storehouse, 24 x 60 feet, covered with corrugated iron.

E. A. Hartley has purchased the G. E. Cloyes stock of Hardware, Stoves and Sporting Goods, Watertown, S. D., and will continue at the same stand.

Burglars recently entered the store of Malcomb & Co., Sterrett, I. T., blew open the safe and carried off $325 in cash.

Marr Bros. are successors to Marr & Markle in the Hardware, Stove, Farm Implement and Sporting Goods business in New Hampton, Iowa.

Joseph H. Gilmore has succeeded F. F. Craft in the Hardware, Stove and Farm Implement business in Jefferson, N. Y. Mr. Craft will hereafter devote his entire attention to creamery interests.

F. Goeller, Newark, N. J., has disposed of his Hardware business.

J. C. Burrows having bought J. S. Burrows' interest in the firm of Burrows Bros., Beeville, Texas, has associated with him in business M. W. Bates, under the firm name of Burrows Hardware Company.

Thomas B. Somers has disposed of his Hardware business at Millville, N. J., to J. W. Anderson, who will continue at the old stand.

G. P. Steele has lately opened up in the Shelf Hardware, Tinware, Farm Implement, Sewing Machine, Wagon and Buggy and Harness business in Middletown, Kan.

E. E. Cross, dealer in Hardware, Stoves, Agricultural Implements, Sporting Goods, &c., Garretson, S. D., will be suceeded by Geo. W. Peterson March 1 next.

S. B. Cleaver has disposed of his Hardware and Farm Implement business in Wapello, Iowa, to Charles L. Beller.

Lessenger & Perry have sold out their Hardware and Furniture busines in Cumberland, Iowa, to J. N. Starrett.

C. D. Ingersoll and Henry Widmann have purchased the Hardware business of Bell Bros., Britton, S. D., and will continue it under the style of Ingersoll & Widmann.

Buck & Evans have succeeded Charles Feyder in the Hardware, Stove and Tinware business in Hartford, S. D.

T. J. Rechner has lately purchased a building in McClure, Ohio, to which he will shortly remove his stock of Shelf Hardware, Tinware and Farm Implements.

The George D. Green Hardware Company, Wilson, N. C., have been incorporated with a capital stock of $17,000. The company will conduct a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

W. A. Rone & Co. are successors to W. A. Rone in the Hardware and Farm Implement business in Centertown, Ky.

Frank A. Bogart has lately opened up in business at Vallejo, Cal., carrying a general line of Hardware, Fishing Tackle and other Sporting Goods, &c. Mr. Bogart conducts a branch store at Los Gatos, which was established in 1884.

John Orr, 2029-2033 Germantown avenue, Philadelphia, Pa., has recently added another building to his Hardware establishment, resulting in a frontage of 32 feet. The two buildings, which are 75 feet deep and three stories high, have been thrown into one, making about 8000 square feet of floor space devoted to the retail business.

Miscellaneous Notes.

Brohard Door Holder.

The Brohard Company, Philadelphia, Pa., manufacturers of the well-known Brohard door holder and the Brohard sash fastener, advise us that they are now prepared to furnish the Brohard door holder in three different sizes and of any style finish desired. The Brohard Company have been shipping their holders to all parts of the United States, and have also done considerable foreign business, recent shipments having been made to Germany and to Cape Town, South Africa.

Electrolite Acetylene Table Lamp.

Edward Miller & Co., Meriden, Conn., and 28-30 West Broadway, New York, are manufacturing the Electrolite acetylene house lamp, as illustrated herewith. This lamp is so built as to generate gas for immediate use

Fig. 1.—Electrolite Acetylene Table or House Lamp.

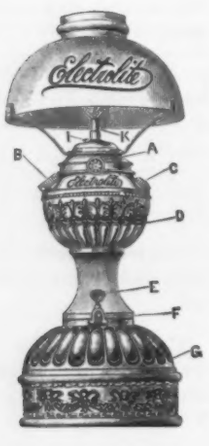


Fig. 2.—Working Parts of the Lamp.

only, but it is ready for lighting at once. There is no overgeneration of gas, because a small amount of granular carbide is fed into a volume of water by means of a funnel shaped receptacle provided with a noncorrosive rubber valve, capable of being perfectly sealed, in combination with an automatically working gas chamber. It will be observed that this reverses the usual principle in carbide lamps, as the custom has been to feed the water into the carbide. Fig. 2 indicates the working parts of the lamp. G is the body or reservoir, which is to be filled with water by loosening clamp E, when the whole upper part of the lamp can be removed. Into this chamber drops the carbide, which combines with the water and remains in a liquid state. This solution is to be emptied out of the chamber G and can be easily disposed of through any outlet, as it is a simple combination of lime and water. The lamp is easily taken care of, as there is nothing of a greasy nature in the materials used. Clean water will put the lamp into its first condition. D is the carbide holder, with a capacity of 1½ pounds, into which the carbide is poured after removing the screw cap C. In filling the holder it is advisable to use a small funnel. A is a thumb screw to a spindle. When unscrewed a precipitation of carbide immediately commences, followed by the instant formation of gas, which is ready for lighting. By screwing in, all pressure in the rubber chamber is relieved and there is no further precipitation of carbide; there is no more gas formed and the flame goes out at once. I is a small screw in contact with a governor or regulator, by which a steady flow of gas is maintained, and a perfectly formed and noiseless flame is secured. Each lamp is accurately adjusted in this respect before it leaves the factory. In case of any blowing of the flame this can be regulated at once by the screw I. To reduce the flame turn the screw inward, and to increase it reverse the motion. K is the burner, through which ¾ cubic foot of gas is consumed in an hour. The light capacity of the Electrolite is given as ten hours under normal conditions. The carbide for this lamp is especially put up and is slightly larger than ordinary granulated sugar. The lamp is finished in nickel, and a 10-inch tripod will be sent out with the lamp regularly to take the ordinary commercial dome shade. Rings 4 or 5 inches in diameter can be furnished if desired.

The Trefry Sash Tightener and Holder.

The accompanying cuts relate to a sash fastener and holder put on the market by H. D. Trefry, 735 State

Fig. 1.

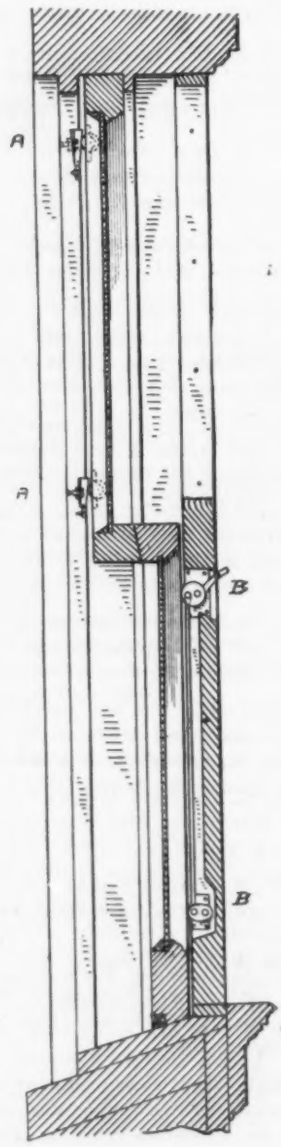


Fig. 2.

The Trefry Sash Tightener and Holder.

street, Bridgeport, Conn., for whom M. D. Halpin, 62 Reade street, New York, is sales agent. The half size cuts shown in Fig. 1 represent the device, the upper ones

being a pair of connected eccentrics, worked by a lever. The location of the eccentrics is shown in Fig. 2 by the letters B B, the upper letter also locating the position of the lever. The eccentrics and connecting rod are hidden from view by the window stop, the only portion in sight being the small lever. By raising the lever the sash is tightened, and by lowering the lever the eccentrics are released and the lower sash has free play in raising or lowering. The lower portion of Fig. 1 represents a metal wedge and a small roller which are used on the upper sash at point A A in Fig. 2. One either side of the upper sash two of the rollers are set, and two of the wedges are set in corresponding positions in the blind stop. When the upper sash is raised the rollers bear against the wedges, forcing the sash firmly against the parting strip, to insure a tight joint all around the sash. The wedges are provided with adjusting screws so that the tightness of the upper sash may be properly regulated in a moment. The various parts of the device are made of brass, except the connecting rod of the eccentrics, which is of steel. The exposed lever can be made to correspond with the hardware trim of the various rooms. Among the advantages claimed by the manufacturer are the following: That there is nothing to interfere with inside or outside screens or blinds, that it obviates the necessity of adjusting stop beads, that the device will last as long as a building, that it decreases the cost of heating in severe weather, and that it eliminates the continual expense of renewed weather strips, or the annual cost of putting on storm sash. The tightener and holder is not burglar proof, and is not designed to take the place of sash fasteners.

Forty-Quart Power Freezer.

Dana & Co., Ninth and Sycamore streets, Cincinnati, Ohio, manufacturers of the Peerless-Iceland and other freezers, have put on the market a power freezer, as here illustrated. It has an extra heavy iron frame and base and is double geared so as to require a minimum amount of power to operate the can, which is full size and made of 18-gauge steel with malleable iron bottom. The dasher has a steel shaft, to which are attached malleable iron floats and double scrapers of good light material, all heavily tinned. The attention of the trade is drawn particularly by the manufacturers to the improved method of attaching can and tub to gears; one turn of the handle wheel at the top serving to attach or release the tub and can instantly from the operation of the gears. There are no screws to loosen, nor is it necessary to lift out any gears, as the latter are contained in a frame and remain stationary, thereby saving both time and adjustment. The bearings are well babbitted and provide means for lubrication, being of such size and proportions as to greatly reduce wear. The fly wheel is extra heavy and is furnished with handle for operation by hand if necessary. The tub is said to be made of the best material obtainable, is 1¾ inches thick and painted both inside and outside, being held together by means of extra heavy iron hoops. The weight of the entire machine is approximately 650 pounds.

Forty-Quart Power Ice Cream Freezer.

Hoyt Hardware Company is the name of a new firm who will continue the business lately conducted by Hoyt & Vincent, Wellsville, N. Y., Charles F. Vincent having retired from the firm. William Hoyt, who has been in business in Wellsville for the past 20 years, the last five in the Hardware line, has associated with him George E. Brown, who will be a silent partner in the new firm, Mr. Hoyt having active charge. The firm will continue to carry a complete line of Shelf and Heavy Hardware, with a department devoted to plumbing, heating and gas fitting. They will devote considerable attention to the Carriage department which was started last year.

The Solar Portable Acetylene Lights.

The Badger Brass Mfg. Company, Kenosha, Wis., manufacturers of acetylene bicycle and carriage lamps, are now offering a line of portable lights. This line comprises lamps for table use and hanging lights for either houses or stores. The principle upon which the lamps are constructed is the same throughout the line, hence a description of the table lamp will suffice for all. Illustrations are given herewith of the Solar table lamp and its parts. Fig. 1 shows the carbide holder, Fig. 2 the gas chamber with tip and shade holder, Fig. 3 the fount and water chamber and Fig. 4 the complete lamp. The carbide holder in use is filled half full of carbide. The gas chamber slides over the carbide holder, which is held by a wire catch. The gas chamber, with the carbide holder inside, is then dropped into the fount until the shade holder strikes the top of it. The lamp is operated by turning the shade holder, which lowers the gas chamber and carbide holder by means of a spiral. This raises the water and gives a pressure sufficient for it to rise through feed tubes opening at the bottom of the carbide holder, thus generating gas, which can immediately be ignited. The body of water then acts both as

The Solar Portable Acetylene Lights.

a feed and a gas seal, besides keeping the lamp cool. The carbide chamber is marked, showing the charges of carbide necessary for two, four or six hours' burning.

This lamp, it is stated, gives a steady, brilliant white light for six to seven hours, is easily charged and recharged, and cannot get out of order, as it has no valves or screws and no joints or washers which might leak. If the lamp should be overturned by accident the light is instantly extinguished. The company have issued a profusely illustrated catalogue which gives full details concerning this line of lamps, and sets forth their special features and advantages.

Oil Can Filler.

The Winkley Company, Hartford, Conn., manufacturers of oil hole covers and oiling devices, are making the oil can filler here illustrated. This is a device intended to quickly fill an oil can from the source of supply without waste or uncleanliness. It consists of a force pump with a brass cylinder connected by a pipe,

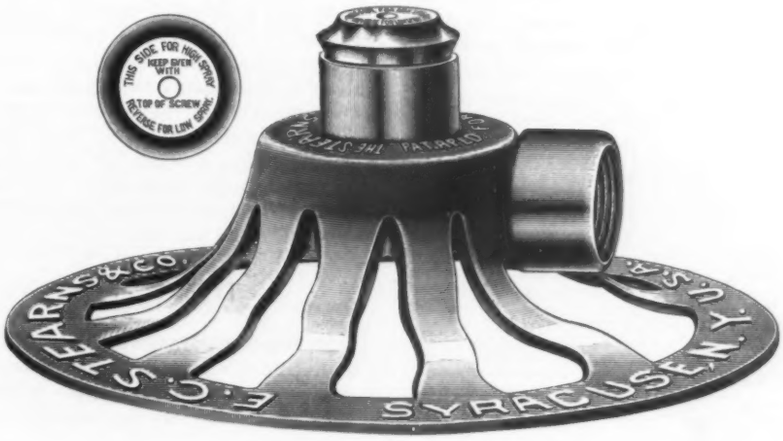
Winkley Oil Can Filler.

made so it can be adjusted in length to suit the hight of the oil tank or barrel on which the pump is used. The piston has pressed leather packing and hard steel valves. To the curved neck of this pump is fitted a double tube from which the oil is discharged. When filled the can is placed upon the adjustable platform, which is operated by a curved lever at the left, and by it the can is lifted until the mouth of the can forms an air tight joint with the leather collar surrounding the discharge tube, which consists of two concentric tubes, the center one supplying oil, while the space between the two vents the cans and returns the surplus to the tank through an overflow tube. The siphon action established in the overflow tube draws the oil down to the end of the filling tube, thus leaving adequate room to insert the spout without overflowing the can. The filler is provided with a side discharge, which is controlled by the faucet. This makes it possible to fill any vessel that cannot be filled on the platform in the regular way. The spindle to which the platform is attached is hollow, so that any oil dropping from the filling tube will return to the tank. The manufacturers refer to the article as built in first-class manner and as substantial in every detail.

Corbett, Rohe & Gaines have succeeded Rohe & Co. and W. H. & R. Buckley, Greensburg, Ind., and occupy the premises formerly used by these firms, the two rooms being connected by archways. The concern handle Shelf Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, Vehicles, &c., and also give attention to roofing and plumbing.

The Stearns Reversible Lawn Sprinkler.

The accompanying cut represents a reversible lawn sprinkler offered by E. C. Stearns & Co., Syracuse, N. Y. The sprinkler is referred to as simple and strong in construction, consisting of three pieces: the standard, the cap and the spring. The standard, which is finished in black enamel, is threaded to fit a standard ¾-inch hose connection and is provided with an internal rubber packing. The cap is alluded to as being made of non-rusting metal, nickel plated. It is explained that the sprinkler is suitable for use with either high or low water pressure, and that the cap is reversible, giving a high or low spray covering a wide area of ground. The makers claim that this is the only lawn sprinkler with which the spray may be gauged by an adjustment on the sprinkler, and a spray covering a wide space secured even with a low water pressure. It is stated that the sprinkler will not clog, as there are no small holes which might fill up. The sprinklers are packed one in a box; two dozen boxes in a case.



The Stearns Reversible Lawn Sprinkler

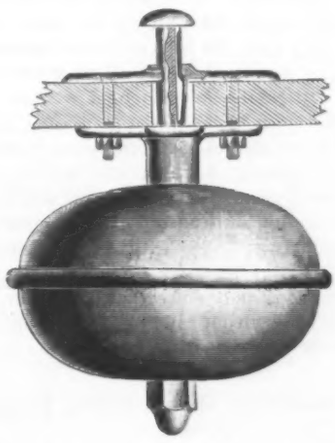
The Iron Age Combined Fertilizer Distributer, Hill and Drill Seeder No. 22.

Bateman Mfg. Company, Grenloch, N. J., are putting on the market a new combined fertilizer distributer, hill and drill seeder, and a fertilizer distributer for side dressing of crops. When seed is sown the tool is of such design, it is explained by the manufacturers, that fertilizer is distributed in two rows, both sides of the seed, just where the plant rootlets will quickly seize and absorb its chemical constituents. The distributing of fertilizer and the drilling in rows, or dropping of the seed in hills, is referred to as being accurately done. For the side or top dressing of growing crops the seed sowing device is detached and the wheels shown in the rear of the tool are substituted. The manufacturers remark that the application of quick acting fertilizers to growing crops is becoming largely practiced. The tool is designed for use by market gardeners and truckers. This tool and other farm and garden implements are described in a catalogue, which will be sent by the manufacturers upon application.

The Iron Age Combined Fertilizer Distributer, Hill and Drill Seeder No. 22.

Automobile Bells.

Frank Mossberg Company, Attleboro, Mass., have just put on the market the Mossberg double stroke or cuckoo chime automobile bell No. 31, here illustrated half size. This bell is patented, and has 5-inch gongs. It is especially adapted for use in private vehicles and on hacks, hansom cabs and carriages of like character. The company also make the Mossberg electric chime automobile bell No. 30, which, in a general way, is represented by the above cut. This bell is also patented, and has gongs 5 inches in diameter. The tone is loud and clear, and is especially intended for crowded thoroughfares, being recommended by the company for street cars, omnibuses, fire apparatus, automobiles, delivery and hurry-up wagons, &c. A feature of both these bells is a spring catch to prevent the operating plunger from rattling or dropping out.

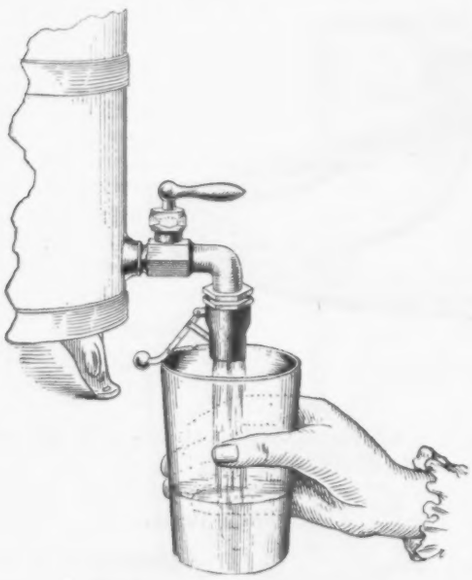


Mossberg Cuckoo Chime Automobile Bell.

The Sweet-Packard Company, Troy, N. Y., have lately incorporated with a capital stock of $20,000. The officers are Halbert D. Sweet, president; Harry S. Packard, vice-president; Louis H. Baker, secretary and treasurer. They are retailers of Shelf Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, House Furnishing Goods, &c.

The Bigelow Automatic Faucet Attachment.

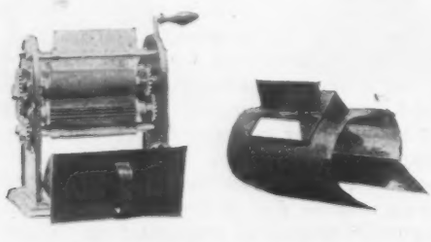
An illustration is herewith given of the application of the Bigelow automatic faucet attachment, which is manufactured by the Frantz-Gage Mfg. Company, 85 Fifth avenue, Chicago. The attachment is for the purpose of securing the instantaneous flow of liquid through a faucet without the constant use of the ordinary faucet handle. The faucet being turned on full the flow of the contents is controlled by a weighted lever projecting from the side of the attachment. The lever is raised by the edge of the glass or other receptacle placed in position under the faucet, which opens the valve and allows the liquid to flow freely. On the withdrawal of the glass or cup the weight of the ball on the end of the lever causes it to drop and the valve closes instantly by the pressure of the liquid above it. The attachment is so made that it can easily be connected with a faucet having no thread. The attachment is simply slipped over the end of the faucet and a compression ring is screwed down, thereby making a quick and secure connection. The valve is so close to the end of the attachment that, it is stated, dripping or wasting is prevented. The device is particularly adapted to use in restaurants, as it is possible with it to draw in immediate succession any number of cups of tea, coffee, milk, water, &c., with great rapidity and without waste. It is made in either nicked plated or brass finish.



The Bigelow Automatic Faucet Attachment.

The Snelling Roller Steak Hacker.

A steak hacker, in three sizes, one of which is here shown, is offered to the trade by the Newark Supply Company, Newark, Ohio. The construction of the hackers is similar in principle to that of clothes wringers. The larger size hacker is provided with two upper rolls which are provided with 80 circular steel knives to slice the steak as it passes between them. From the upper the meat passes to the lower pair of rolls, which are equipped with a set of 50 longitudinal steel knives, which are designed to slice the steak into squares about ⅛ inch in size, leaving the steak whole in appearance but cut to the center. The latter rolls complete the treatment to which the steak is subjected, the entire operation requiring a few revolutions of the handle. The machine is not a hamburger machine or sausage grinder. The manufacturers state that meat treated with the hacker retains all its juices, making it tender and sweet, that the machine is low in price and soon saves its cost, that it is readily kept clean, that it is easily and quickly manipulated and that its use promotes digestion. The machine is made in three sizes, No. 1 having a double set of knives as described. No. 2 machine is made with a single set of circular knives, as illustrated herewith, but the same results are obtainable with the No. 2 as with the No. 1 machine, it is explained, if the steak be made to pass through the rolls again in the opposite direction. Machine No. 3 is the same as No. 2, except that it has 60 instead of 80 knives.



The Snelling Roller Steak Hacker.

Tryon's Patent Wrench.

The Hartford Hardware Company, Hartford, Conn., are offering the wrench shown herewith. It is a combination of a screw wrench, pipe wrench and tap wrench or drill brace, and can be used as a small vise for holding objects. The thumb screw at the end permits the operator to apply the full strength of his fingers, or another wrench can be used on the screw, should it be required. Among the points of excellence the manufacturers name the following: That no part of the wrench detracts from the strength or usefulness of any of the other combinations; that while light in construction it embodies the principles of strength and compactness and that the open metal handle possesses advantages over a wooden handle. The wrench is made in six sizes No. 1 is essentially a bicycle wrench. No. 2 is designed for house and office use. Nos. 3 and 4 are for use in the stores, janitor's rooms or on carriages or wagons or automobiles or steam launches, and Nos. 5 and 6 are designed for heavy work, such as pipe fitting and in machine shops. It is referred to as a handy wrench for all classes of mechanics.

Tryon's Patent Wrench

Current Hardware Prices.

REVISED FEBRUARY 5, 1901.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Cut Prices.—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (May 3, 1900), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₩ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₩ ℔ 7¼@7¾¢
Hay-Budden, Wrought.....9¢@9¼¢
Horseshoe brand, Wrought.....9½@9¾¢
Samson.....₩ ℔ 7¾@8¢
Trenton, Wrought.....₩ ℔ 8¼@8¾¢

Imported—

Armitage's Mouse Hole.....8¾@9¼¢
Peter Wright's.....9¼@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull & Hoyt Co.:
Lots of 1 doz.....25%
Smaller Lots.....30%
Lots of 3 doz.....30%

Augers and Bits—

Com. Double Spur.. .....70@70&5%
Boring Machine Augers.....60&10&10@70&5%
Car Bits, 12-in. twist.....60@60&10%
Jennings' Pattern:
Auger Bits.... .....50&10&5@60%
Ford's Auger and Car Bits..
40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list....40%
No. 30. R. Jennings' List.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....65&5@70%

Expansive Bits—

Clark's small, $18; large, $26 .....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33⅓%
Swan's.....60%

Gimlet Bits—

Common Double Cut..gro. $2.00@2.75
German Pattern.....gro. $3.25@4.50
Double Cut, makers' lists.....
50&5@50&10%

Hollow Augers—

Ames.....25&10%
Bonney's Adjustable, ₩ doz.....$15.55
New Patent.....25&10%
Universal.....20%

Ship Augers and Bits—

Ford's.....40%
Snell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent.....gro. 51@54c
Unhandled, Shouldered. gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@13.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands.$6.25@6.50
First Quality, other brands$6.00@6.25
Jobbers' Special Brands:
Good Quality.....$5.00@5.50
Best Quality.....$6.25
Cheap, Handled Axes.....$5.50@5.75
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—

Iron or Steel.
Concord, Loose Collar.....4½c
Concord, Solid Collar.....5 c
No. 1 Common.....3@3¼c
No. 1½ Com. New Style...3½@4 c
No. 2, Solid Collar.....3½@3¾c
Nos. 7, 8, 11 to 14 ... .75&10%
Nos. 15 to 18..... ....60&10&10%
Nos. 19 to 22.....80%
2% cash 10 days.

Boxes, Axle—

Common and Concord, not turned..
lb. 5c
Common and Concord, turned..lb. 6c
Half Patent.....lb. 9c

Balances—

Caldwell new list..... .....50%
Pullman's 60%

Sash—

Spring—

Spring Balances.....50@50&10%
Chatillon's Light Spg. Balances...40&10%
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50%
Chatillon's Large Dial.....30%
Peinouze.....50%

Barb Wire—See *Wire, Barb.*

Bars—

Crow—

Steel Crowbars, 10 to 40 lb., per lb..
3@3½c

Beams, Scale—

Scale Beams, List Jan. 12, '88.30&10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—

Egg—

Standard Co.:
No. 5 Steel Handle Dover. ₩ gro. $6.50
No. 10 Cast Handle Dover..₩ gro. $8.00
No. 10 Steel Handle Dover. ₩ gro. $8 00
No. 15 Extra Heavy Steel Handle, ₩ gro. $15.00
Rival, ₩ gro.....$10.00
Taplin Mfg. Co.:₩ gro.
No. 50 Small Family size.....$6.50
No. 100 Regular Family size.....$8.00
No. 102 Regular Family size tinned...
$9.50
No. 150 Large Family size.....$15.00
No. 152 Large Family size, tinned ....
$17.00
Lyon's, Standard size.....₩ doz. $1.75
Wonder (S. S. & Co.).....₩ gro. $7.50

Bellows—

Blacksmith, Standard List.70@70&10%
C. E. Jennings & Co., Blacksmith..60&10%
C. E. Jennings & Co., Hand.....33⅓&5

Blacksmiths—

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Each..	*$3.70*	*3.95*	*4.55*	*5.10*	*5.70*	*6.55*

Extra Length:
Each..$4.25 4.85 5.40 5.95 6.80 7.95

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*	*16*
Doz...	*$6.75*	*7.25*	*8.50*	*9.50*	*12.00*	*14.50*

Hand—

Inch...	*6*	*7*	*8*	*9*	*10*	*12*
Doz....	*$3.75*	*4.25*	*4.50*	*5.00*	*5.75*	*6.75*

Net Prices.

Bells—

Cow—

Ordinary goods.....75&5@75&10%
High grade.....70@70&10%
Jersey.....75&10%
Texas Star.....50&10%

Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's ....30&10&10%

Hand—

Hand Bells, Polished.....60@60&10%
White Metal.....55@55&10%
Nickel Plated.....50@50&10%
Swiss 60%
Silver Chime.....33⅓&33⅓&10%

Miscellaneous—

Farm Bells..... ...lb. 2@2¼c
Steel Alloy Church and School.....
50&10&5@60%
Wilmot & Hobbs Mfg. Co., Gongs.....70%

Belting—

Rubber—

Common Standard.....75@75&10%
Standard..... ..70@70&10%
Extra..... .60&10&5%
High Grade..... 0&10@50&10&5%
Boston Belting Co.:
Seamless Stitched, Imperial.....45%
Boston.....50&5%
Niagara.....60&5%

Leather—

Extra Heavy, Short Lap..50&10@60%
Regular Short Lap 60&10@50&10&5%
Standard .....60&10&10@70&5%
Light Standard.....70@70&10%

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand..... ..... 70%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters...
40@50%

Bicycle Goods—

John S. Long's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—
See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Tackle—

Common Wooden.....70@70&10%
Cleveland Steel.....50&10&60&10%
Ford's Star Brand Self Lubricating ..
60&10%
Hollow Steel, Ford's Pat. Star Brand...
50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron.....50%
See also *Machines, Hoisting.*

Boards, Stove—

Zinc, Crystal, &c.... .....60&10%

Bolts—

Carriage, Machine &c.—

Common, list Jan. 30, '95..70&2½@..%
Norway Iron, $3.00, list Oct. 7, '84..
75@75&10%
Phila. Eagle, $3.00 list May 24, '99....
80@80&10%
Bolt Ends, list Jan. 30, '95.....
70&10&2½@..%
Machine, list Oct. 1, '99.70&10&2½@..%
Machine with C. P., C. & T. Nuts.70%
NOTE—*The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz..	*$0.33*	*.36*	*.45*	*.57*	*.80*

Cast Iron Spring Foot:

Inch	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.35*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.85*	*1.20*	*1.50*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.60*	*.90*	*1.15*

Wrought Barrel Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz ..	*$0.44*	*.50*	*.61*	*.70*	*1.23*

Wrought Barrel .....70@70@75&5%
Wrought " Bronzed..40&5@50&10%
Wrought Flush, B. K..50&10@60&10%
Wrought Shutter...40&10&10@60&5%
Wrought Square Neck.....50@50&10%
Wrought Sunk.....50@50&10%
Ives' Patent Door..... 60%

Stove and Plow—

Plow .....60&10@..%
Stove.....77½%

Tire—

Common.....77½%
American Screw Company:
Norway Phila., list Oct. 16, '84.....75%
Eagle Phila., list Oct. 16, '84.....85%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....75%
Eagle Phila., list Oct. 16, '84.....85%
Eclipse, list Dec. 28, '99.....77½%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....77½%
Keystone Phila. list Oct. '84.....80%
Norway Phila., list Oct. '84.....75%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz..	*$3.50*	*4.50*	*5.00*	*6 50*
Inch		*2¼*		*2½*
Per Doz.....		*$7.50*		*10.25*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....35@30%

Boring Machines—*See Machines, Boring.*

Boxes Mitre—

C. E. Jennings & Co.....40%
Seavey's, per doz., $30.....40%

Braces—

NOTE.—*Most Braces are sold at net prices.*
Common Ball, American...$1.15@1.25
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford's..... ....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414..... ..... .60%
C. E. Jennings & Co.....50&10%
P. S. & W. Co., Peck's Patent50&10@60%

Brackets—

Wrought Steel.....70&10@75&5%
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%
Griffin's Pressed Steel.....75&10%
Griffin's Folding Brackets.....70&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....70@70&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier..... ₩ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—

Brass—

Wrought list Sept., '96.25&10@35&5%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....50@50&10%
Fast Joint, Narrow.. .....50@50&10%
NOTE.—*Jobbers often sell the following at 70&5%:*
Loose Joint.....70@70&5%
Loose Pin.....70@70&5%
Mayer's Hinges.....70@70&5%
Parliament Butts.....70@70&5%

Wrought Steel—

Loose Joint.....
Table and Back Flaps..
Narrow and Broad.....
Inside Blind.....
Loose Pin.....
Loose Pin, Ball and Steeple Tip
75@75&5%
Bronzed Wrt. Nar. and Inside Blind Butts.....50&10@50&10&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronzes:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb. 3¼@4¢
Sharp, 1 prong.....per lb. 4¼@4½¢
Perkins' Blunt.....₩ ℔ 5 ¢
Perkins' Sharp.....₩ ℔ 5½¢

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1 75	2.10	2.25	each.
Iowa Pattern...		2.40	2.60	each.
Buffalo Pattern.		2.30	2.50	each.
	20	30	40	qts.
New York Patt'rn	3.00	3.35	3.40	each.
Baltimore Patt'rn	2.50	2.85	3.10	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	108 gro.

Caps—Percussion—

Eley's E. B.....50c
G. D.....per M 32@34c
F. L.....per M 37@40c
G. E.....per M 47@50c
Musket.....per M 57@60c

Primers—

Berdan Primers, $1.00.....5%
B. L. Caps (Sturtevant Shells) $1.00.....5%
All other primers.....$1.10@$1.15

Carpet Stretchers—
See *Stretchers, Carpet.*

Cartridges—
B. B. Caps, Con., Ball Swgd.....$1.90
B. B. Caps, Round Ball... $1.12@1.18
Blank Cartridges:
32 C. F., $5.50.....10c&5%
38 C. F., $7 00.....10c&5%
22 cal. Rim, $1.50.....10c&5%
32 cal. Rim, $2.75.....10c&5%
Central Fire 25%
Pistol and Rifle.....15c&5%
Primed Shells and Bullets.....15c&5%
Rim Fire Sporting.....50%
Rim Fire, Military.....15c&5%

Casters—
Bed..... ..70@70c&10%
Plate.....75@75c&10%
Philadelphia.. .....75@75c&10%
Boss.....70&10%
Boss Anti-Friction .....70&10%
Martin's Patent (Phœnix).....45%
Payson's Anti-Friction .....70&10&10%
Standard Ball Bearing.....45%
Tucker's Patent, low list.....30%

Cattle Leaders—
See *Leaders, Cattle.*

Chain—
American Coil, Less than Casks:

3 16	*¼*	*5-16*	*⅜*	*7-16*	*½*	*9-16*
7.30	*5.40*	*4.40*	*3.55*	*3.40*	*3.30*	*3.25*
⅝	*¾*	*⅞ to 1¼ inch.*				
3.25	*3.20*	*3.20 cents per lb.*				

Cask lots deduct 25c per 100 lbs.
German Coil, list July 24, '97.60 & 10c&10%
German Halter Chain, list July 24, '97.....60c&10c&10%
Traces, Western Standard: 100 pair
6½—6-3, Straight, with ring...$26.00
6½—6-2, Straight, with ring.. $27.00
6½—8-2, Straight, with ring.. $31.00
6½—10-2, Straight, with ring..$35.00
Add 2c per pair for Hooks.
Twist Traces 2c per pair higher than Straight Link.
Trace, Wagon and Fancy Chains, Eastern list.....50c&10@60%
Jack Chain, list July 10, '93 :
Iron.....60@60c&10%
Brass.....60@60c&10%
Safety Chain.....70@70c&10%
Gal. Pump Chain.....lb 4½@4¾c
Covert Sad. Works :
Breast, Hitching and Rein Chains..50%
Covert Mfg. Co.:
Breast.....35&2%
Halter.....35&2%
Heel.....35&2%
Rein.....35&2%
Stallion.....35&2%
Oneida Community :
Eureka Coil and Halter.....60@60&5%
Niagara Coil and Halters....60@60&5%
Niagara Cow Ties.....45&5@45&10&5%
Am. Coil and Halters....50&10&5@60%
Am. Cow Ties.....35&5@40&5%
Wire Goods Co.:
Dog Chain.....69%
Machinists' and Pipe Fitters' Chests, Empty.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....25@25&10%

Chalk—(From Jobbers.)
Carpenters', Blue.....gro. 45c
Carpenters', Red .....gro. 40c
Carpenters', White.....gro. 35c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—
Bardsley's.....40&10%
Columbia.....50&10%
Eclipse.....60@60&10%

Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemens' Chests, with Tools.....30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....25@25&10%

Chisels—
Socket Framing and Firmer
Standard List .. ..70c&10@...%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60&10%
C. E. Jennings & Co. Socket Framing No. 15.....60&10%
Swan's.....70&5%
L. & L. J. White.....30@30&5%

Tanged—
Tanged Firmers.....40c&5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 19., 181. .25&5%
L. & L. J. White, Tanged.....25&5%

Cold—
Cold Chisels, good quality lb. 15@16c
Cold Chisels, fair quality.....lb. 12c
Cold Chisels, ordinary.....lb. 8@9c

Chucks—
Beach Pat., each $8.00.....20%
Skinner Patent Chucks :
Combination Lathe Chucks.....40%
Drill Chucks, Patent and Standard..30%
Drill Chucks, New Model ..... 2 %
Independent Lathe Chucks.....40%
Improved Planer Chucks.....20%
Universal Lathe Chucks.....40%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....40%
Czar Drill 30%
Geared Scroll 30%
Independent.....40%
Union Drill.....30%
Universal.....40%
Face Plate Jaws.....35%

Clamps—
Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers' Sargent's.....50&10%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners Walk—
Star Socket, All Steel....₱ doz. $4.00 net
Star Shank, All Steel....₱ doz. $3.75 net
W. & C. Shank, All steel, 7¾ in. ₱ d oz., $3.35; 8 in., $3.40; 8¼ in., $3.50.

Cleavers, Butchers'—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....40&10%
Fayette R. Plumb.33⅓&10@33⅓&10&5%
P., S & W.....33⅓&5@33⅓&10%
L. & I. J. White.....25%

Clippers—
Chicago Flexible Shaft Company :
Handy Toilet.....₱ doz. $7.20
Mascotte Toilet.....₱ doz. $3.40
Monitor Toilet.....₱ doz. $9.00
Stewart's Patent.....₱ doz. $10.00

Clips, Axle—
Eagle and Superior ¼ and 5-16 inch.....70c&10%
Norway, ¼ and 5-16 inch..70@70c&10%

Cloth and Netting, Wire
—*See Wire, &c.*

Cocks, Brass—
Hardware list (Globe, Kerosene, Racking, &c.).....65c&10%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Stevens' list.....40%
Embossed, Gilt, Pope & Stevens' list30&10%
Leather Pope & Stevens' list..... 40%

Compasses Dividers, &c.
Ordinary Goods .. ..70c&10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....50%
Compasses.....50%
J. Stevens A. & T. Co.....25&10%

Conductor Pipe, Galvanized—
Factory Shipments to Jobbers :

Territory.	*Carload. Loose.*	*L. C. L. Nested.*
Eastern....	*75c&10%*	*75c&5%*
Central....	*75c&7½%*	*75c&2½%*
Southern...	*75c&5%*	*75%*
S. Western.	*75%*	*70c&10c&2½%*

Terms 2% for cash.
See also *Eave Trough and Elbows*

Coolers, Water—

Nos....	2	3	4	6
Labrador	$11.50	$14.00	$17.50	$20.00
	8 gal.			
	$23.00			
Nos	3	4	6	8
Iceland..	$23.00	$25.00	$30.00	$37.50
	10	14 gal.		
	$57.00	$72.00		

Coopers' Tools—
See *Tools, Coopers'.*

Cord— Sash—
Braided, Drab..... lb. 25c
Braided, White, Common, lb 17½@18c
Cable Laid Italian..lb. A, 18c; B, 16c
Common India.....lb 9 @9½c
Cotton Sash Cord, Twisted....12@16c
Patent Russia.....lb. 13½@13c
Cable Laid Russia.....lb. 13½@14c
India Hemp, Braided.....lb 14@15c
India Hemp.....lb. 10@12c
Patent India .....lb. 10@12c
Pearl Braided, cotton .....₱ ℔ 17@18¢
Massachusetts, Braided.....₱ ℔ 22½¢
Massachusetts, Drab. .....₱ ℔ 26½¢
Eddystone Braided Cotton.....₱ ℔ 19¢
Harmony Cable Laid Italian.....₱ ℔ 18¢
Ossawan Mills :
Crown, Solid Braided White...₱ ℔ 18¢
Braided, Giant, White.....₱ ℔ 17¢
Peerless :
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....18¢
Phœnix, White.....19¢
Samson :
Braided, Drab Cotton .....₱ ℔ 32½¢
Braided, Italian Hemp... ...₱ ℔ 32½¢
Braided, Linen .....₱ ℔ 49¢
Braided, White Cotton, Spot.₱ ℔ 28½¢
Silver Lake :
A quality, Drab, 40¢.....15%
A quality, White, 35¢.....15%
B quality, Drab, 35¢.....15%
B quality, White, 30¢.....15%
Italian Hemp, 40¢ 15%
Linen, 67½¢.....15%

Wire, Picture—
Braided or Twisted,
See *Trade Report.*

Corn Knives and Cutters
—See *Knives, Corn.*

Corn Planters—
See *Planters, Corn—*

Crackers, Nut—
Little Giant .....₱ gr. $24.00

Cradles—
Grain.....50%

Crayons—
White Round Crayons, gross.5½@6c
Cases, 100 gro., $5.00, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square.....gr. $1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—
Fort Madison, Heavy .....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden .....₱ doz. $10.00

Cutters— Glass—
Smith & Hemingway Co.....30%

Meat—
Hale's..Nos. 11 & 111 12 & 112 13 & 113
Per doz .. $10.80 13 20 18.00
American.....30%

Nos.....	1	2	8	4	B	5
Each.....	$5	$7	$10	$25	$50	$60
Connecticut :						
Nos.....	0	1	8	10	12	
Each..	$1.75	2.25	3.00	3.00	3.50	

Enterprise.....				25@25&7½%	
Nos.....	5	10	12	22	32
Each.....	$2	$3	$2.50	$4	$6

Dixon's, ₱ doz.....33½&10%

Nos..	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Home No. 1, ₱ doz. $22.75 .....50&10%
Little Giant, ₱ doz.....33⅓@33⅓&5%

Nos. 305	310	312	340	322
$35.00	$48.00	$44.00	$73.00	$68.00

Sterling.....33⅓&5%

Nos	1	2
Each	$5.00	$2.50

Miles' Challenge, ₱ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

New Triumph No. 605, ₱ doz. $24.00 .. 33⅓&5%
Woodruff's, ₱ doz 40%

Nos.....	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers..... ..25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9..55%
Kraut Cutters 36 x 12, 40 x 12.....40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ₱ gr....$18@$20
Slaw Cutters, 2 Knife, ₱ gr....$22@$36

Tobacco—
All Iron, Cheap.....doz. $1.25@$1.50
Enterprise.....25@30%
National, ₱ doz. $21.00.....40%
Sargent's, ₱ doz. $24.00.....45&10%

Washer—
Appleton's, ₱ doz. $16.00..... .....50&10&10%
Bonney's..... .....₱ doz. $4.75

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger..per doz .$10.00
Iwan's Improved Post Hole Auger.....40%
Iwan's Perfection Post Hole Digger... ₱ doz. $9.00
Kohler's Universal..... ₱ doz. $14.00
Kohler's Little Giant..... ₱ doz. $15.00
Kohler's Hercules..... ₱ doz. $12.00
Kohler's Invincible..... ₱ doz. $10 00
Kohler's Rival..... ₱ doz. $9.00
Kohler's Pioneer..... ₱ doz. $9.00
Never-Break Post Hole Diggers, ₱ doz. $24.00.....60%
Samson, ₱ doz. $34.00.....25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15 No. 3, $14; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Common Blacksmiths' Drill..each $1.50@$1.75
Blacksmiths' Self-feeding.....each $3.75@4.00
Breast, Millers Falls, each $3.00 .15&10%
Breast, P., S. & W .....30&30&10%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills Nos. 2 and 3.....10&5%
Johnson's Drill Points.....25&10%
Ratchet, Curtis & Curt's 25%
Ratchet, Parker's 40%
Ratchet, Weston's.....20@25%
Ratchet, Whitney's, P. S. & W...40&10%
Whitney's Hand Drill, No. 1, $10.00:
Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—
Standard List..... .60c&5@65c&5%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Baisey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros.....30%
Buck Bros' Screw Driver Bits.....27½%
Champion.....40&10%
Douglass Mfg. Co.....20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet.....35%
Goodell's Automatic 50&10&10@50&10&10&5%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....45&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1,50,55 and 60.....50&10&10%
Nos. 20 and 40.....60%&10%
Screw Driver Bits.....₱ doz. 50@70¢
Smith & Hemenway Co .....40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles.....60&10%
No. 86.....70&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....20&10&10%

Eave Trough, Galvanized
Factory Shipments to Jobbers.

Territory.	*Carload.*	*L. C. L.*
Eastern.....	*80c&10c&5%*	*80c&10%*
Central.....	*80c&10c&2½%*	*80c&7½%*
*Southern .... *	*80c&10%*	*80c&5%*
*S. Western... *	*80c&2½%*	*80%*

Terms, 2% for cash.
See also *Conductor Pipe.*

Egg Beaters—See *Beaters, Egg*

Egg Openers—
See *Openers, Egg.*

Elbows and Shoes—
Factory shipments to jobbers..... 60c&10c&5%
Perfect Elbows (S. S. & Co.)..... .....40%

Emery, Turkish—

	4 to 16	*5 to 150*	*Flour*
Kegs.....lb.	*5c*	*5½c*	*5¾c*
½ Kegs ....lb.	*5¼c*	*5¾c*	*5¾c*
¼ Kegs ....lb.	*5½c*	*6c*	*6c*
10-lb cans, 10 in case.....	*6½c*	*7c*	*6c*
10-lb. cans, less than 10 . .	*10c*	*10c*	*8c*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%

Faucets—
Cork Lined.....70c&5@70c&10c&5%
Metallic Key, Leather Lined..... 70@70c&10%
Red Cedar..... .....50@50c&5%
B. & L. B. Co.:
West's Lock, Open and Shut Key50&10%
John Sommer's Peerless Tin Key.... 40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined 50&10%
John Sommer's Common Cork Lined.70%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's Perfection Cedar....40%
Star.....60@60&5%
Star, Metal Plug new list.....40@40&5%
Lockport, Metal Plug, reduced list.60&5%
McKenna, Brass:
Burglar Proof, N. P.....35%
Improved, ¾ and ⅞ inch.....35%
Self Measuring:
Enterprise, ₱ doz. $36.00.... .....40%
Lane's, ₱ doz. $36.00..... .....40&10%
National Measuring, ₱ doz. $36.00....40%

Felloe Plates—
See *Plates, Felloe.*

Files—Domestic—
List revised Nov. 1, 1899.
Best Brands.....70@75c&5%
Good Brands.....75c&10@75c&10c&10%
Fair Brands..... .....80@80c&10%
Second Quality.....80c&10@80c&25%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....25%

Fixtures, Grindstone—
Net Prices :

Inch....	*15*	*17*	*19*	*21*	*24*
Per doz.	*$2.90*	*3.10*	*3.30*	*3.80*	*4.60*

Stowell's Giant Grindstone Hanger.... ₱ doz. $6.00
Stowell's Grindstone Fixtures.....50%
P., S. & W. Co.....50&10&10%
Reading Hardware Co.....30&20&10%
Sargent's .....60&10&10%

Fluting Machines—
See *Machines, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Sept. 1, 1900, list.
Grain or Barley Forks, 15 to 20 inches.....70c&5%
Hay, 2 tine..... .....65%
Hay, 3 tine.....66⅔%
Hay, 4 tine. Header and Barley Forks, 13 to 16 inches.....66⅔%
Manure, 4 tine 70%
Manure, 5 and 6 tine.....70%
Spading.....70c&5%
Iowa Dig-Eze Potato.....65%
Victor, Hay.....66⅔%
Victor, Manure..... .....70%
Victor, Header.....60&30%
Champion, Hay.....66⅔%
Champion, Manure.....70%
Columbia, Hay.....66⅔&5%
Columbia, Manure 70%
Columbia, Spading 70%
Hawkeye Wood Barley 4 tine ₱ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger.....65%
Acme Hay.....60&20&7½%
Acme Manure.....60&25%
Dakota Header.....70&10&2½%
Jackson Steel Barley.....70&10&2½%
Kansas Header.....65&20%
W. & C. Favorite Wood Parley 4 tine, ₱ doz., $5.00; 5 tine, $6.00
Plated.—See *Spoons.*

Frames—
Saw—
Red, Polished and Varnished..doz. $1.15@$1.50
White.....doz. 75@80c

Screens and Frames—
See *Screens.*

Freezers, Ice Cream—

Qts...	*2*	*3*	*4*	*6*	*8*	*10*
Best.	*$1.45*	*1 65*	*1.95*	*2.40*	*3.20*	*4.20*
Good	*$1 25*	*1.40*	*1.70*	*2.15*	*2.75*	*3.75*
Fair.	*$1.00*	*1.10*	*1 30*	*1.75*	*2.30*	*2.90*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—
Per 1000 Feet.
Hemp Fuse .....$2.60 (Case lots 25%)
Cotton Fuse.....2.90
Single Taped Fuse.....3.25
Double Taped Fuse.....4.20
Triple Taped Fuse.....5.00

Gates, Molasses and Oil—
Stebbins' .....80&10@80&10&10%

Gauges—
Marking, Mortise, &c..... 55c&10@55c&10c&10%
Barrett's Comb. Roller Gauge.... ₱ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Babbet Gauge.....20&10%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire P., S. & W. Co.....10&10&5%

Gimlets—

Nail, Metal, Assorted ..... gro. $1.40@1.75
Spike, Metal, Assorted ..... gro. $3.00@3.50
Nail, Wood Handled, Assorted ..... gro. $4.00@4.25
Spike, Wood Handled, Assorted ..... gro. $5 00@5.25

Glass, American Window

Jobbers' List, Sept. 1, 1900
Small lots from store:
Single and Double Strength, all sizes ..... 85d&5%
10% to be added on all first quality, both Single and Double.

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush. ..... 57½@50%
List B, Cans (½ pts., pts., qts.) ..... 55@48%
List C, Cans (½ gal., gal.) ..... 25@45%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Common Grade ..... gro. $5.00@6.00
Dixon's Everlasting ..... 10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs.. ₱ doz. 1 lb $1.20; 2 lb $2.00
Snow Flake: 1 qt. cans, per doz. $2.00; 2 qt., $3.20; ½ gal. cans per doz. $6.00; 3 gal. $16.00; 5 gal. $24.00 } 10%

Grindstone Fixtures—

See *Fixtures, Grindstone.*

Guards, Snow—

Cleveland Wire Spring Co.:
Galv. Steel ₱ 1000 ..... $9.00
Copper ₱ 1000 ..... $18.00

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

	gro.
Peg Patent, Leather Top	$4.90@5.25
Peg Patent, Plain Top	$3.50@3.75
Sewing, Brass Ferrule	$1 50@1.60
Saddlers', Brass Ferrule	$1.35@1.45
Peg, Common	$1.25@1.35
Brad, Common	$1.50@1.75

Halters and Ties—

Covert Mfg. Co., Web ..... 45&2%
Covert Mfg. Co., Jute Rope ..... 45&2%
Covert Mfg. Co., Sisal Rope ..... 30&2%
Covert's Saddlery Works', 96 list, Web ..... 60&10%
Covert's Saddlery Works, Leather ..... 60&10%
Covert's Saddlery Works, Jute ..... 60&5%
Covert's Saddlery Works, Sisal 60%
Covert's Saddlery Works, Manila ..... 60&5%
Covert's Saddlery Works, Cotton 70%

Hammers—

Handled Hammers—

Heller's Machinists' ..... 50@50&5%
Heller's Farriers ..... 50@50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40&10%
Peck, Stow & Wilcox ..... 40@40&10%
Fayette R. Plumb:
Plumb, A. E. Nail ..... 40&10@50%
Engineers' and B. S. Hand ..... 60&10&7½%
Machinists' Hammers ..... 60&10&7½%
Riveting and Tinners' ..... 50@50&10%
Sargent's C. S. New List ..... 45&10%

Heavy Hammers and Sledges—

3 lb. and under ..... lb. 45c
3 to 5 lb ..... lb. 36c } 80d10@90
Over 5 lb ..... lb. 30c } &10d10%
Wilkinson's Smiths' ..... 9½c@10c lb.

Handcuffs and Leg Irons

See *Police Goods.*

Handles—

Agricultural Tool Handles—

Axe, Pick, &c ..... 60@60d10%
Hoe Rake, Fork, &c ..... 60@60d10%
Shovel, &c., Wood D Handle ..... 50@50d5%

Cross-Cut Saw Handles—

Atkins' ..... 40&5%
Champion ..... 45@45&10%
Disston's 50%

Mechanics' Tool Handles—

Auger, assorted ..... gro. $2.30@2.50
Brad Awl ..... gro. $1.25@1.50
Chisel Handles:
Apple Tanged Firmer, gro. ass'd, $2.25@2 35; large, $2.50@2.60.
Hickory Tanged Firmer, gro. ass'd, $1.75@2.20; large, $3 50@3.70.
Apple Socket Firmer, gro. ass'd, $1.70@1.85; large, $2 00@2.25
Hickory Socket Firmer, gro ass'd, $1.60 @ $1.75; large, $1.75 @ $2.00
Hickory Socket Framing, gro. ass'd, $2.50@2.75; large, $2.65@2.85
File, assorted ..... gro. $1.00@1.15
Hammer, Hatchet, Axe, &c 60%
Hand Saw, Varnished, doz. 70@75c
Not Varnished ..... 55@60c
Plane Handles:
Jack, doz. 25c; Jack Bolted ..... 55@60c
Fore, doz. 35@38c; Fore, Bolted ..... 70@75c

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Doz	$0.85	1.30	1.60	1.95	$.45

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch	3	4	5	6
Doz	$1.45	1.90	2.55	$.10

Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin 25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door 50%
Elevator 40%
Railroad 55%
Cronk Hanger Co.:
Loose Axle 60%
Roller Bearing ..... 60&10%
Lane Bros.:
Parlor, Ball Bearing $4.00
Parlor, Standard $3.25
Parlor, New Model $2.75
Parlor New Hampton $2 40
Barn Door, Standard ..... 60&10%
Covered ..... 50&10&10&5%
Special ..... 60&10%
Lawrence Bros.:
Advance 60%
Cleveland ..... 60&10%
Crown 60%
New York 60%
Peerless ..... 60&10%
Sterling 60%
McKinney Mfg. Co.:
No. 2, Standard, $18 ..... 60&10%
No. 1, Special, $13 ..... 60&10%
Stowell Mfg. and Foundry Co.:
Atlas 60%
Baggage Car Door 50%
Climax Anti-Friction 50%
Elevator 40%
Interstate ..... 50&10%
Magic 50%
Matchless 60%
Nansen ..... 60&10%
Parlor Door 50%
Railroad ..... 50&10%
Street Car Door ..... 50&10%
Steel, Nos. 800, 400, 500 ..... 40&10%
Zenith for Wood Track ..... 50&10%
Taylor & Boggs Foundry Co.:
Kidder's ..... 50@50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless ..... 33⅓&10%
Wilcox Mfg. Co.:
Bike Roller Bearing ..... 60&10%
C. J. Roller Bearing ..... 60&10%
Cycle Ball Bearing 60%
Dwarf Ball Bearing 40%
Ives, Wood Track ..... 60&10%
L.T. Roller Bearing ..... 60&10&5%
New Era Roller Bearing ..... 50&10%
O. K. Roller Bearing ..... 60&10&5%
Prindle, Wood Track 60%
Richards' Wood Track 60%
Richards' Steel Track ..... 50&10%
Spencer Roller Bearing ..... 60&10%
Tandem Nos. 1 and 2 ..... 60%
Underwriters' Roller Bearing 40%
Wilcox Auditorium Ball Bearing 20%
Wilcox Barn Trolley No. 123 ..... 40%
Wilcox Fire Trolley, Roller Bearing 30%
Wilcox Le Roy Noiseless Ball Bearing 40%
Wilcox New Century ..... 50&10&10%
Wilcox Trolley Ball Bearing 40%

Extra 5&10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—

McKinney's Perfect Hasp ₱ doz 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—

Best Brands ..... 40d10@50%
Cheaper Brands ..... 50d10@50d10d5%
Note.—Net prices often made.

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind:

(*Victor; National; 1858 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.*)			
No	1	3	5
Doz pair	$0.75	1 45	2.90

Mortise Shutter:

(*L. & P., O. S., Dixie, &c.*)				
No	1	1½	2	2½
Doz. pair	$0.60	.55	.52	.45

Mortise Reversible Shutter, (Buffalo, &c.)

No	1	1½	2
Doz. pair	$0.65	.60	.55

Parker ..... 70@75%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%
Reading's Gravity ..... 75&10%
Sargent's, Nos. 1, 3, 5 ..... 66⅔&10%
Sargent's, Nos. 11 & 13 ..... 70&10%
Wrightsville H'dware Co.:
O. S. Lull & Porter ..... 80&2½%
Acme, Lull & Porter ..... 75&10%
Queen City Reversible ..... 75&10%
Stenger's Positive Locking, Nos. 1 & 3 ..... 70&10&5%
Shepard's Noiseless, Nos. 60, 65, 55 ..... 70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
1858, Old Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Tip Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
Shepard's Double Locking, Nos. 20 & 25 ..... 70&10%
Champion Gravity Locking, No. 75 ..... 75&7½%
Steamboat Gravity Locking, No. 10 ..... 5&7½%
Pioneer, Nos. 060, 45 & 5½ ..... 75&7½%
Empire, Nos. 101 & 103 ..... 70&7½%
W. H. Co.'s Mortise Gravity Locking, No 2 ..... 60&10%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets $1.30 ..... 30&10%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No	1	2	3
Hinges with Latches	$1.90	2.50	3.25
Hinges only	1.30	1.90	2.90
Latches only	0.65	0.65	0.95

New England:
With Latch ..... doz ..... @$1.55
Without Latch ..... doz. ..... @$1.25
Reversible Self-Closing:
With Latch ..... doz ..... @$1.80
Without Latch ..... doz. ..... @$1.45
Western:
With Latch ..... doz. $1.40@1.75
Without Latch ..... doz. $0.95@1.20
Wrightsville H'dware Co.:
Shepard's or Clark's, Nos. 1 & 2.. 65&2½%
Shepard's or Clark's, No. 3 ..... 55&5%

Spring Hinges—

Holdback, Cast Iron, gro. $8.00@8.25
Non-Holdback, Cast Iron ..... gro. $6.75@7.25
J. Bardsley
Bardsley's Patent Checking 15%
Bommer Bros.:
Bommer's 33⅓%
Chicago Spring Butt Co.:
Chicago 20%
Floor Hinge 40%
Garden City Engine House 20%
Keene's Saloon Door 20%
Triple End 40%
Hoffman Hinge & Foundry Co.:
No. 70 & 80 Holdback Detachable $8.50
Lawson Mfg. Co.:
Matchless 30%
Matchless Pivot 35%
Payson Mfg. Co.:
Oblique ..... 50&10%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr. $12.50
Ideal, No. 4 ..... ₱ gr. $9.00
New Idea No. 1 ..... ₱ gr. $9.00
New Idea, Double Acting 45%
Van Wagoner & Williams Hdw. Co.:
Acme, Wrt. Steel 30%
Acme, Brass 20%
American 30%
Columbia, No. 14 ..... ₱ gr. $9.00
Columbia, No. 18 ..... ₱ gr. $25.00
Columbia, Adjustable 30%
Gem, new list 25%
Clover Leaf ..... ₱ gr. $12.50
Oxford new list 25%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1898:

Light Strap Hinges	66⅔%	Extra
Heavy Strap Hinges	70%	25d10@
Light T Hinges	50d10%	25d10d5
Heavy T Hinges	60d10%	
Extra Heavy T Hinges	66⅔%	
Hinge Hasps	55	
Cor. Heavy Strap	70%	5%
Cor. Ex. Heavy T	66⅔%	

Screw Hook and Strap:

6 to 12 in.	lb 2¾@3 c
14 to 20 in.	lb 2½@2¾c
22 to 36 in.	lb 2¼@2½c

Screw Hook and Eye:

¾ to 1 inch	lb. 5¾@6	c
⅝-inch	lb 6¼@7	c
½-inch	lb. 8¾@9	c

Hods, Coal—

	15	16	17	18 inch.
Galv. Open	$2 05	2.20	2.45	2.65 ₱ doz.
Jap. Open	$1.55	1.70	1.85	2.05 ₱ doz.
Galv. Fun'el	$2.75	2.90	3.10	3 45 ₱ doz.
Jap. Funnel	$2.00	2 15	2.35	2.70 ₱ doz.

Hoes—Eye—

Scovil and Oval Pattern ..... 60d5@60d10d5%
Grub, list Feb. 23, 1899 ..... 70d5@70d10%
D. & H. Scovil 35%

Handled—

Sept. 1, 1900, List:
Field and Garden 75d2%
Ladies', Boys', Toy and Onion 70d10d10%
Street and Mortar 75d7½d2%
Cotton 70d10d10d5d2%
Planters' ..... 70&30%
Weeding 75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe ..... 75&2%
Ft. Madison Crescent Cultivator Hoe, per doz ..... 75&10&2%
Ft. Madison Mattock Hoes:
Regular Weight ..... ₱ doz. $4.50
Junior Size ..... ₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz. $4.80
Ft. Madison Dixie Tobacco Hoe.. 75&20%
Kretsloger's Cut Easy, per doz ..... 75&2%
Warren Hoe 60%
W. & C. Ivanhoe ..... 75&2%
B. B. Cultivator Hoe ..... 75&10%
Acme Weeding ..... 75&10%
W. & C. Lightning Shuffle Hoe, ₱ doz. $5.50

Hog Rings and Ringers—

See *Rings and Ringers.*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow Ware—

See *Ware, Hollow.*

Holders—

Bit—

Angular, ₱ doz. $24.00 ..... 45&10%

Door—

Empire 50%

File and Tool—

C. E. Jennings & Co. Model Tool Holders 33⅓%
Nicholson File Holders and File Handles 33⅓%

Hooks—Cast Iron—

Bird Cage, Reading ..... } 50&10&60%
Bird Cage, Sargent's List ..... }
Clothes Line, Sargent's List ..... 50&10&5%
Ceiling, Sargent's List ..... 40&10%
Clothes Line, Stowell's 70%
Clothes Line, Reading List ..... 65&10&65&10&10%
Coat and Hat, Stowell's 70%
Coat and Hat, Reading ..... 70&75%
Coat and Hat, Sargent's List ..... 45&10%
Coat and Hat, Wrightsville ..... 65&10%
Harness, Reading List ..... 70&10@75%

Wire—

Belt 80%
Atlas, Coat and Hat:
Single Cases 45%
10 Case Lots ..... 45&10%
Czar Harness ..... 50&10&5%
Wire Coat and Hat:
Acme ..... 50&10&5%
B. B. ..... 50&10&5%
V Brace, Chief and Czar ..... 50&10&5%
Gem 60%
Bright Wire Goods—See *Wire.*

Wrought Iron—

Box, 6 in, per doz. $1.50; 8 in., $1.75; 10 in., $2.00.
Cotton ..... doz. $1.05@1.25
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—

Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass	*Nos.* 1	2	3	4
Best	$1.50	1.75	2.00	
Common	$1.40	1.40	1.50	1.75

Potato and Manure 70%
Whiffletree ..... lb. 4¾c
Hooks and Eyes:
Brass ..... 60d10d10@70%
Malleable Iron ..... 70d5@70d10%
Covert Saddlery Works' Self Locking Gate and Door Hook ..... 60&10%
Crown Picture ..... 50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—See *Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—

See *Shoes, Horse.*

Hose Rubber—

Garden Hose, ¾-inch:
Competition ..... ft. 4¼@ 4¾c
3-ply Standard ..... ft. 5 @ 6 c
4-ply Standard ..... ft. 8 @ 9 c
3-ply extra ..... ft. 9 @10 c
4-ply extra ..... ft. 11 @12 c
Cotton Garden, ¾-in., coupled:
Low Grade ..... ft. 6 @7 c
Fair quality ..... ft. 8 @9 c

Irons—Sad—

From 4 to 10 ..... lb 3@3¼c
B. B. Sad Irons ..... lb. 3½@4c
Chinese Laundry ..... lb. 5@5¼c
Chinese Sad ..... lb. 3½@3¾c
Mrs. Potts', per set:

Nos.	50	55	60	65
	67@72c	68@69c	77@82c	71@79c

New England Pressing ..... lb. 3½@3¾c

Soldering—

Soldering Coppers. 1 @ 1¼ lb, 21 @ 23c.; 2 lb., 19 @ 21c
Covert Mfg. Co ..... 20&2%

Pinking—

Pinking Irons ..... doz. 50@60c

Jack Screws—See *Screws.*

Jacks, Wagon—

Covert Mfg. Co., Steel ..... 45&2%
Daisy 70%
Lockport ..... 40@40&10%
Victor 60%
Lane's Steel ..... 33⅓&5%

Kettles—

Brass, Spun, Plain ..... 20@25%
Enameled and Cast Iron—See *Ware, Hollow.*

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.—

Dick's Butcher Knives 40%
Foster Bros.' Butcher, &c 30%
Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, ₱ doz $3.25
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List ..... 70d5@70d10%
Adjustable Handle ..... 25@33⅓%
Bradley's 35%
C. E. Jennings & Co. Nos. 45, 46.. 40&10%
Jennings & Griffin ..... 66⅔&5%
Swan's ..... 70&10&2½%
Watrous ..... 30&10@40%
L. & I. J. White ..... 20&5@25%
Cantelo's Folding ..... 50@50&5%

Hay and Straw—

Lightning Pattern ..... per doz. $6.00 @6.25
Iwan's Sickle Edge ..... ₱ doz. $11.50
Lightning $7.50
Maine ..... ₱ doz. $8.50

Mincing—

Buffalo ..... ₱ gro. $15.00

Miscellaneous—

Farriers' ..... doz. $2 00@3.00
Wostenholm's ..... ₱ doz. $3.00@3.25

Knobs—

Base, 2¼-inch, Birch, or Maple. Rubber tip, gro ..... $1.20@1.30
Carriage, Jap, all sizes ..... gro, 30@33c
Door, Mineral ..... doz. 60@65c
Door, Por. Jap'd ..... doz. 70@75c
Door, Por. Nickel ..... doz $2 00@2.10
Bardsley's Wood Door, Shutter, &c 15%
Picture, Sargent's ..... 60&10%
Snow's Victor ..... 50&10%

Ladders, Step—

Handy Ladder Works:

Length. Feet.	Extended Length. Feet.	Shipped Ready for Use	Per doz.	Shipped K. D., Per doz.
4	7		$16.00	$14.00
5	9		12.50	17.00
6	11		24 50	21.00
7	13		29.50	25.00
8	15		34.00	29.00
9	17		38.00	32.00
10	19		43.00	35 00
11	21		46.50	40.00
12	23		51.00	45.00

Ladies— Melting—

L. & G. Mfg. Co. 60%
P., S. & W. ..... 40@40&10%
Reading ..... 50&10%
Sargent's ..... 40@40&10%

Lanterns— Tubular—

Regular Tubular ..... doz. $4.50@5.60
Side Lift Tubular ..... doz. $4.75@5.25
Square Lift Tubular..doz. $4.75@5.25
Other Styles ..... 40&10@40&10&5%

Bull's Eye Police—

No. 1, 2¾ inch $3.60
No. 2, 3 inch $4.00

Latches, Thumb—

Roggin's Latches ..... doz. 32@33c

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Small ..... doz. 50c; *large*, 55c
Covert Mfg. Co. ..... 45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Solid drip, Payson Mfg. Co. 60%
R & E. 45%

Lines—

Wire Clothes, Nos...	*18*	*19*	*20*
100 feet	$2.20	2.00	1.65
75 feet	$1.80	1.70	1.30

Ossawan Mills.
Crown Solid Braided Chalk..... 33⅓%
Mason's, No. 0 to No. 5 ..... 33⅓%
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3..... 40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gr. 30%

Locks—

Cabinet—

Cabinet Locks ..... 33⅓@33⅓&7½%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading Hardware Co. 40%
R. & E. Mfg. Co. 60%
Sargent & Co. ..... 40@40&10%
Snow's Victor ..... 50&10%

Elevator—

Stowell's 33⅓%

Padlocks—

Wrought Iron ..... 75&10@80%
R. & E. Mfg. Co. Wrt Steel and Brass. 50%

Sash, &c.—

Fitch's Bronze and Brass 66⅔%
Fitch's Iron 70%
Ives' Patent ..... 55&5@65%
Payson's Signal 80%
Reading ..... 60&10&10@70%

Machines—

Boring—

	Upright.	Angular.
Improved No. 3	$4.25	No. 1 $5.00
Improved No. 4	3.75	No. 2 3.38
Improved No. 5	2.75	
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75
Swan's, No. 500	5.10	No. 200 6.45

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 20%

Ice Cutting—

Chandler's 15%

Washing—

Wayne American, ₱ doz. $28.00
Western Star, No. 2, ₱ doz. 28.00
Western Star, No. 3, ₱ doz. 30.00
St. Louis, No. 41, ₱ doz. 60.00
Carload lots 10% off, freight allowed.

Mallets—

Hickory ..... 45&5@50&5%
Lignumvitæ ..... 45&5@50&5%
Tinners', Hickory and Applewood, doz. ..... 50@55c

Mats—

Door—

Elastic Steel (W. G. Co.) 10%

Mattocks—

See *Picks and Mattocks.*

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk*

Mills— Coffee—

Enterprise Mfg. Co. ..... 25@30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor@ ..... 50&10@60%
Parker's Box and Side ..... 50&10@60%
Swift, Lane Bros. 30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.
Cheap ..... *all sizes, $2.00@2.10*
Good ..... *all sizes, $2.50@2.75*

	10	*12*	*14*	*16-inch*
High Grade	4.25	4.50	4.75	5.00

Pennsylvania and Continental. 60&10&5%
Quaker City ..... 70&5%
Great American ..... 70&5%
Philadelphia:
Styles M., S., C., K., T. ..... 70&5%
Style A, all Steel ..... 60&10%
Style E, Low Wheel ..... 60&10%
Style E, High Wheel ..... 70&10&5%
Drexel and Gold Coin, low list ... 50&5%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899 ..... 85@85&10%
Hungarian, Finishing, Upholsterers', &c. See Tacks

Horse—

Nos.	6	7	8	9	10	
A. C	25¢	23¢	22¢	21¢	21¢	40&5%
Ausable	28¢	26¢	25¢	24¢	23¢	50&10%
Capewell	19¢	18¢	17¢	16¢	16¢	10&5%
C. B. K.	25¢	25¢	22¢	21¢	21¢	40%
Champi'n	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton	19¢	17¢	16¢	15¢	14¢	30&10&5%
Maud S.	25¢	23¢	22¢	21¢	21¢	50%
Neponset	23¢	21¢	20¢	19¢	18¢	40%
Putnam	23¢	21¢	20¢	19¢	18¢	33⅓%
Vulcan	23¢	21¢	20¢	19¢	18¢	25&10%

American, Nos. 2 to 10 ₱ lb. ..... 9@9½¢

Picture

	1½	*2*	*2½*	*3*	*3½*	*in.*
Brass Head	.45	.60	.70	.95	1.00	*gro.*
Por. Head	..	1.10	1.10	1.10	..	*gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—

List Feb. 1, '99.
Cold Punched ..... *Off*
Mfrs. or U. S. Standard. list.
Hexagon, plain ..... 5.80@5.90c
Square, plain ..... 5.40@5.50c
Square, C. T. & R. ..... 5 60@5.70c
Hexagon, C. T. & R. ..... 6.40@6.50c
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank or Tapped .. 5.80@5 90c
Hexagon Blank or Tap'd 6 0@6.10c

Oakum—

Best or Government ..... *lb.* 6¼c
Navy ..... *lb.* 5 c
U. S. Navy ..... *lb.* 5¼c
Plumbers' Spun Navy 8¾c
In carload lots ¼c lb. off f.o.b. New York.

Oil, Axle—

Snow Flake: 33⅓&10%
1 pt. cans, per doz. $3.00
1 qt. cans, per doz. $4.80
1 gal. cans, per doz. $15 00
5 gal. cans, per doz. $66.00

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... 40&10@50%
Tin or Steel ..... 60&10@65%
Zinc ..... 60&10@65%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co:
Spring Bottom Cans ..... 70@70&10%
Railroad Oilers etc, ... 60@60&10%

Oponers—

Can—

French ..... *doz.* 35c
Iron Handle ..... *doz.* 25@27c
Sprague, Iron Hdle..per doz. 35@40c
Sardine Scissors...doz. $1.75@$3.00
Tip Top ..... per doz. $0.75
National, ₱ gro. ..... $1.75@$3.00
Stowell's ..... per doz. 40@45c
Waldorf, ₱ gro. $9.00

Egg—

Nickel Plate ..... per doz., $2.00
Silver Plate ..... per doz., $4.00

Packing—

Rubber—

Standard, fair quality ..... 70&10@75%
Inferior quality ..... 75&10@80%
Extra ..... 60&5@60&10&5%
Jenkins' Standard, ₱ lb 80c ... 25@25&5%

Miscellaneous—

American Packing ..... 9@10c lb.
Cotton Packing ..... 13@15c lb.
Italian Packing ..... 10½@11¼c lb.
Jute ..... 3½@5c lb.
Russia Packing ..... 12@13c lb.

Pails—

Creamery—

S. S. & Co., with gauges.. No 1 $6.50; No. 2, $6.75 ₱ doz.

Galvanized—

Price per gro.

Inch	*10*	*12*	*14*
Water, Regular	15.00	$1.00	$4.00
Water, Heavy	22.00	25.00	28.00
Fire, Rd. Bottom	31.00	33.00	35.00
Well	27.00	29.00	31.00

Pans—

Dripping—

Standard List ..... 65&10@65%

Fry—

Common Lipped:

No.	*1*	*2*	*3*	*4*	*5*
Per doz.	$0.60	.75	.85	.95	1.15

Roasting and Baking—

Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00
Simplex, ₱ gro., No. 40 $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37 50; 160, $43.00.

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing: Light wt., 20 sq. ft. to lb.	$0 40@0.45
Medium wt., 12 sq. ft. to lb	$0.60@0.65
Heavy wt., extra quality	$0.95@1.05
Medium Grades Water Proof Sheathing	$0.30@1.25
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	$50.00
York Haven Waterproof Sheathing	$1 35@1.75

Tarred Paper.

1 ply (roll 200 sq ft.), ton $28 00
2 ply, roll 100 sq. ft. ..... 50@55c
3 ply, roll 100 sq. ft. ..... 75@80c

Sand and Emery—

List Dec. 23, 1899..50&10@50&10&10%

Parers—

Apple—

Advance	₱ doz.	$4.50
Baldwin	₱ doz.	$5.00
Bonanza	each	$5.00
Dandy	each	$7.50
Eureka, 1898	each	$16.00
Family Bay State	₱ doz.	$12.00
Hudson's Little Star	₱ doz.	$4.00
Hudson's Rocking Table	₱ doz	$5.50
Improved Bay State	₱ doz.	$27.00@30.00
New Lightning	₱ doz.	$5.50
Reading 72	₱ doz.	$4.00
Reading 78	₱ doz.	$7.00
Turn Table '98	₱ doz.	$5.50
White Mountain	₱ doz.	$4.00

Potato—

Saratoga	₱ doz.	$5.50
White Mountain	₱ doz.	$4.50

Paris Green— *per lb.*

In Arsenic, kegs or casks 12½c
In kegs, 100 to 175 lbs. ..... 13 c
In kits, 14, 28, 56 lbs. ..... 14 c
In paper boxes, 2 to 5 lbs. ..... 14 c
In paper boxes, 1 lb. 14½c
In paper boxes, ½ lb. 15½c
In paper boxes, ¼ lb. 16½c

Picks and Mattocks—

List Feb. 15, 1899 ..... 75@75&10%

Pinking Irons—

See *Irons, Pinking.*

Pins—

Escutcheon—

Brass ..... 60&10%
Iron, list Nov. 11, '85 ..... 60&10%

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in. ..... 70@70&5%
Extra Heavy, 2-6 in. ..... 75@75&5%
Fittings ..... 75&10&5@80%

NOTE.—*Freight allowances on Carload oils.*

Pipe, Merchant, Boiler Tubes, &c.—

Carloads to Consumers.

Merchant Pipe.

	Black.	*Galvanized.*
⅛ to ½ inch	61%	48%
¾ to 10 inch	68½%	56%

Boiler Tubes

Steel.	*Up to 22 feet.*	*22 feet and over.*
1 to 1½ inch and 2½ in.	49½%	44½%
1¾ to 2¼ inch	45%	39½%
2¾ to 13 inch	57%	52½%
Iron.		
1 to 1½ inch and 2½ in.	49½%	44½%
1¾ to 2¼ inch	45%	39½%
2¾ to 13 inch	57%	52½%
Casing, Cut Lengths.		*S. & S.*
2 to 3 inch		58%
3½ to 4 inch		63%
4½ to 12½ inch		65%

NOTE.—*The old list is still used by some jobbers, and net prices are often quoted.*

Planes and Plane Irons—

Wood Planes—

Molding ..... 40&2½@40&10%
Bench, First quality ..... 45&10@45&10&5%
Bench, Second quality ..... 50&10@50&10&5%
Bailey's (Stanley R. & L. Co) 50&10@50&10&10%
Gage Self Setting 35%

Iron Planes—

Bailey's (Stanley R. & L. Co) 50&10@50&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10@25&10&10%
Sargent's ..... 50&10&10%

Plane Irons—

Wood Bench Plane Irons ..... 30&5@30&10&5%
Buck Bros. 30%
Butcher's ..... $5.00@5.25 to 2
Stanley R. & L. Co... 50&10@50&10&10%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand.

Kohler's Eclipse ..... ₱ doz. $9.00

Plates—

Felloe ..... *lb.* 5¾@4c
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00 ..... 50%

Pliers and Nippers—

Button Pliers ..... 70&10@75%
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45.

Gas Pipe..	*7*	*8*	*10*	*12-in.*
	$1.75	$2.00	$2.75	$3.75

Acme Nippers ..... 40@40&5%
Bernard's:
Parallel Pliers, &c. 50%
Paragon Pliers ..... 50&5%
Lodi Pliers ..... 50&5%
Elm City Fence Pliers 35%
Cronk Hanger Co.:
Cronk's 60%
Improved Button ..... 70&5%
Stub's 50%
Combination and others 25%
Heller's Farriers' Nippers, Pincers, and Tools 50@50&5%
Morrill's Parallel, ₱ doz. $12.00... 30&5%
P., S. & W. Cast Steel ..... 30&10@40%
P., S. & W. Tinners' Cutting Nippers, 40@40&5%
Swedish Side, End and Diagonal Cutting Pliers. 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Plumbs and Levels ..... 70c10@75c&5%
Davis Iron, Machinist Nos. 1 to 14 ... 20%
Davis Iron, Adjustable Nos. 6 to 49 ... 35%
Disston's 70%
Pocket Levels ..... 75&10&10@75&10&10%
Stanley R. & L. Co.. ..... 70&10@70&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Glaziers'—

Bulk and 1 lb. papers.. lb. 9¼@10 c
¼-lb. papers ..... *lb.* 10 @10½c
½-lb. papers ..... *lb.* 10½@11 c

Pokes, Animal—

Ft. Madison Hawkeye ..... ₱ doz. $3.25
Ft. Madison, Western ..... ₱ doz. $3.75

Police Goods—

Manufacturers' Lists ..... 25@25&5%
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72 ..... 40%
Prestoline Paste ..... 33⅓&40%
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₱ doz. $1.50

Stove—

Black Eagle Benzine Paste, 5 lb cans ... ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans ..... ₱ doz. 75¢
Black Jack Paste, ½ lb cans, ₱ gro. $9.00
Ladd's Black Beauty, gr. $10.00 ..... 50%
Joseph Dixon's, ₱ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₱ lb 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $4.50 ..... 10%
Japanese ..... ₱ gr. $3.50
Jet Black ..... ₱ gr. $3.50
Peerless Iron Enamel, ½ pt. cans ..... ₱ doz. $1.50
Wynn's Black Silk, 5 lb pail ..... each 70¢
Wynn's Black Silk, ½ lb box, ₱ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₱ doz. $0.75
Wynn's Black Silk, ½ pt. liq., ₱ doz. $2.00

Poppers, Corn—

Round or Square:
1 qt. ..... *gro.* $7.00@$7.50
1½ qt. ..... *gro.* 9 50@ 10 00
2 qt. ..... *gro.* 10.50@ 11.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled ..... 40c10@50%
Tinned ..... 40@45%

Powder—

In Canisters:
Duck, 1 lb. each 45c
Fine Sporting, 1 lb. each 75c
Rifle, ½-lb. each 15c
Rifle, 1-lb. each 25c
In Kegs:
Duck, 6½-lb. kegs $2.25
Duck, 12½-lb. kegs $4.25
Duck, 25-lb kegs $8.00
Rifle, 6½-lb. kegs $1.25
Rifle, 12½-lbkegs $2 25
Rifle, 25-lb. kegs $4.00
King's Smokeless Shot Gun and Rifle: 30&2½&10&25%
Keg (25 lb bulk) $22 00
Half Keg (12½ lb bulk) $11.25
Quarter Keg (6¼ lb bulk) $5.75
Canister (1 lb bulk) $1.00
King's Semi-Smokeless: 30&2½&10&25%
Keg (25 lb bulk) $10.00
Half Keg (12½ lb bulk) $5.25
Quarter Keg (6¼ lb bulk) $2.75
One Pound Can, bulk $0.50

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. ..... 20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Crown, ₱ doz. $18.00 ..... 50%
Crown Prince, ₱ doz. $15.00 ..... 50%
Cyclops ..... 40@40&10%
Diamond B, No. 2, doz. $22.; No. 3, $11 ..... 40%
Eureka, 5 lb, doz., $16.00; 3 lb $15 ..... 40%
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15 ..... 40%
Miller's Falls, No. 3, per doz. $12.00 ..... 40%
Pelican ₱ doz. $9.00 ..... 75&10%
Scranton, No. 1 and 2, ₱ doz. ..... 40&10%
Scranton, No. 3, ₱ doz. $9.00
$4.50

Pulleys—

Hay Fork, Swivel or Solid Eye..... doz. $1.50@1.75

Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₩ doz. $12.00..... 40%

Hot House, Awning, &c..... 60@60&10%

Jacanned Clothes Line..... 60@60&10%

Jacanned Screw..... 70&10&10%

Jacanned Side..... 70&10&10%

Stowell's Ceiling or End, Anti-Friction 60%

Stowell's Dumb Waiter, Anti-Friction .. 60&10%

Stowell's Electric Light..... 60%

Stowell's Side, Anti-Friction..... 60&10%

Sash Pulleys—

Acme..... 1¾ in., 16¢; 2 in., 19¢

Common Sense, 1¾ in.... ₩ doz., 18¢; 2 in., 20¢.

Fox-All-Steel, Nos. 3 and 7, 2¼ in..... ₩ doz. 25¢

No. 9, 1¾ in..... ₩ doz. 20¢

Extra for Plated Finish..., ₩ doz. 20¢

Extra for Anti-Friction Bronze Bushing..... ₩ doz 10¢

Grand Rapids All Steel Noiseless.... 40%

Ideal No. 13..... 1¾ in., ₩ doz., 20¢

Niagara..... 1¾ in., 16¢; 2 in., 19¢

No. 20, Troy.... 1¾ in., 14¼¢; 2 in., 16½¢

Star..... 1¾ in., 16¢; 2 in., 19¢

Tackle Blocks—See *Blocks.*

Pumps—

Cistern..... 60@60&10%

Pitcher Spout..... 75&5@75&10%

Pump Leathers, all sizes.... gro. $6.00

Barnes Dbl. Acting (low list)..... 55%

Flint & Walling's Fast Mail... 55@55&10%

Flint & Walling's Pitcher Spout..... 75&5%

Loud's Suction Pumps, U. d. Co..... 20%

Myer's Pumps, low list..... 50%

Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co..... 20%

Punches—

Revolving (4 tubes)...doz. $3.75@4.00

Saddlers' or Drive, good..doz. 65@70c

Spring, good quality..... $1.65@1 75

Bemis & Call Co.'s Cast Steel Drive.... 50%

Bemis & Call Co.'s Check..... 55%

Bemis & Call Co.'s Spring..... 50%

Niagara Hollow Punches..... 45%

Niagara Solid Punches..... 55%

Steel Screw, B & K. Mfg. Co..... 40%

Tinners' Hollow, P., S. & W. Co..... 35@33&5%

Tinners' Solid, P., S. & W.Co., ₩ doz., $1.44..... 55%

Rail—Barn Door, &c.—

	Small.	Med.	Large.
Barn Door, Light..In.	½	⅝	¾
100 feet.....	$2.00	$2.50	$3.00
B. D., for N. E. Hangers:			
100 feet.....	$2 20	2.70	3.20

Sliding Door, Bronzed Wr't Iron, ft. 6½¢

Sliding Door, Iron Painted....2½@3c

Sliding Door, Wrought Brass. 1½ in.... lb. 36c..30%

Cronk's Double Braced Steel Rail, ₩ foot..... 3½¢

Cronk's O. N. T. Rail..... 3½¢

Lanes' O. N. T., ₩ 100 ft., 1 inch... $2.65

Lanes' Standard, ₩ 100 ft..... 3.75

Lawrence Bros.' ..... ₩ ft. 4½¢

McKinney's None Better..... ₩ ft. 3¢

McKinney's Standard..... ₩ ft. 3½¢

Moore's Wr't. Bracket, Steel..... 3½¢

Stowell's Steel Rail, Plain..... 3½¢

Rakes—

Net Prices, Malleable Rakes:

	10	12	14	16-tooth
Shank.....	$1.50	1.60	1.75	1.85
Socket...	$1.65	1.80	1.95	2.10

Sept. 1, 1900, List:

Cast Steel..... 70¢&5¢&2%

Malleable..... 70¢&10@75¢&5%

Lawn Rakes, Metal Head, per doz., 20 teeth, $3.25; 24 teeth $3 50.

Fort Madison Red Head Lawn.... $3 25

Fort Madison Blue Head Lawn.... $3.00

Jackson Lawn, 29 and 30 teeth..... ₩ doz. $4.50

Kohler's Lawn Queen, 24-tooth, ₩ doz. $4.00

Kohler's Paragon, 24-tooth, ₩ doz. $3.00

Kohler's Steel Garden, 14-tooth, ₩ doz. $3.50

Kohler's Malleable Garden, 14-tooth. ₩ doz..... $2.50

Rasps, Horse—

Disston's..... 75%

Heller Bros..... 60&10&10%

McCaffrey File Co. Horse Rasps..... 60&10&5%

New Nicholson Horse Rasp..... 70&10%

See also *Files.*

Razors—

Fox Razors, No. 42... ₩ doz. $30.00

Fox Razors, No 44... ₩ doz $24.00

Fox Razors, No. 82, Platina, ₩ doz $24.00 } 20%

Sterling Razor Works..... 30%

Razor Strops—

See *Strops, Razor.*

Reels—Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes..... 25%

Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%

Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 02904PN, 0924 and 0924N, 5009N and PN..... 40&10%

Shakespeare, Style C..... 25%

Registers—

Black Jap..... 60%

White Jap..... 40%

Bronzed..... 40%

Nickel Plated..... 50%

Electro Plated..... 40%

Riddles, Grain or Sand—

16 in. per doz..... $3.00@$3.25

17 in. per doz..... $2.25@$2.50

in. per doz..... $2.50@$2.75

Rings and Ringers—

Bull Rings—

	2	2½	3 Inch.
Steel.....	$0.80	0.90	0.95 doz.
Copper.....	1.10	1.30	1.50 doz.

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.50@4.75

Hill's Ringers, Gray Iron doz. 55@60c

Hill's Ringers, Mal. Iron, per doz 75@80c

Flair's Rings.....per gro. $5.75@6.00

Flair's Ringers...per doz. $0.90@1.00

Brown's Rings....per gro. $6.00@6.25

Brown's Ringers..per doz. $1.00@1.10

Rapid Rings..... ₩ gro. $6.00

Rapid Ringers..... ₩ doz. $3.50

Rivets and Burrs—

Copper..... 50@50¢&5%

Iron or Steel:

Tinners' ..... 70¢&10@75%

Miscellaneous ..... 70¢&10@75%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction 50%

Barn Door, Sargent's list..... 50&10&10%

Cronk's stay..... 66⅔%

Cronk's Brinkerhoff..... 66⅔%

Lane's, Stay 33⅓%

Stowell's Barn Door Stay... ₩ doz. $1.25

Rope—

Manila, 7-16 in. and larger. lb. 9¾@10 c

Manila.....¾-inch lb. 10¾@10½c

Manila..¼ and 5-16 in. lb. 10¼@11 c

Manila, Tarred Rope, 15 thread..... lb 9¾@ 10 c

Manila Hay Rope Med'm. lb 9¾@ 10 c

Sisal, 7-16 in. and larger. lb. 7¼@ 7½c

Sisal.....¾-inch. lb. 7¾@ 8 c

Sisal....¼ and 5-16 in. lb. 8¼@ 8½c

Sisal, Hay Rope, 2 to 10 ply..... lb. 7½@ 7¾c

Sisal, Tarred, Medium Lath Yarn..... lb. 6¾@ 7 c

Cotton Rope:

Best, ¼-in. and larger.. lb... @14 c

Med'm, ¼-in. and larger lb... @11½c

Com., ¼-in. and larger. lb... @ 9 c

Jute Rope, No. 1, ¼ in. and up..... lb... @ 6½c

Jute Rope, No. 2, ¼ in and up..... lb .. @ 6 c

Wire Rope—

Galvanized ..... 25&10¢&2%

Plain..... 50¢&10¢&2%

Ropes, Hammock—

Covert Mfg. Co..... 45&2%

Covert Saddlery Works..... 60%

Rules—

Boxwood..75¢&10¢ 10¢&10¢&10@75¢&10 ¢&10¢&10¢&5%

Ivory ...40¢&10¢&10@40¢&10¢&10¢&10¢&10%

Lufkin's Steel..... 50&10%

Lufkin's Lumber..... 50&10%

Stanley R. & L. Co.:

Boxwood...75&10&10@75&10&10&10%

Ivory..... 35&10@35&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins' Circular..... 50@50&10%

Atkins' Band ..... 50&10@60%

Atkins' Cross Cuts ..... 35&5%

Atkins' Mulay, Mill and Drag..... 50&10%

Atkins' One-Man Saw..... 40%

Atkins' Wood Saws 40%

Atkins' Hand, Compass, &c..... 40%

Disston's Circular Solid and Inserted Tooth..... 50%

Disston Band 2 to 14 in. wide..... 60%

Disston Band ¼ to 1¼..... 70%

Disston Crosscuts..... 45@45&10%

Disston Narrow Crosscuts.... 50@50&10%

Disston Mulay, Mill and Drag..... 50%

Disston Framed Woodsaws.... 35@35&7½%

Disston Woodsaw Blades..... 40@40&7½%

Disston Woodsaw Rods..... 25%

Disston Handsaws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8..... 25@25&7½%

Disston Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination... 30@30&7½%

Disston Compass Keyhole, &c 25@25&7½%

Disston Butcher Saws and Blades..... 35@35&7½%

C. E. Jennings & Co.'s.:

Back Saws..... 25%

Butcher Saws..... 35%

Compass and Key Hole Saws..... 25%

Framed Wood Saws..... 40%

Hand Saws..... 25@30%

Wood Saw Blades..... 45%

Peace Circular and Mill..... 50%

Peace Cross Cuts, list Jan. 1, '99..... 50%

Perce Hand, Panel and Rip..... 30%

Richardson's Circular and Mill 50%

Richardson's X Cuts, list Jan. 1, '99.. 50%

Richardson's Hand, &c..... 30%

Shaonds' Circular Saws..... 50%

Simonds' Crescent Ground Cross Cut Saws..... 35%

Simonds' One-Man Cross Cuts.... 40&10%

Simonds' Gang Mill, Mulay and Drag Saws..... 45@45&5%

C. E. Jennings & Co's:

Hack Saw Frames, Nos. 175, 180, 330..... 40%

Hack Saws, Nos. 175, 180, 330, complete..... 40%

Griffin's Hack Saw Frames 45%

Griffin's Hack Saw Blades..... 45%

Star Hack Saws and Blades..... 15&10%

Scroll—

Barnes' No. 7, $15..... 25%

Barnes' Scroll Saw Blades..... 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20..... 20%

Lester, complete, $10.00..... 15&10%

Rogers, complete, $4.00..... 15&10%

Scale Beams—

See *Beams, Scale.*

Scales—

Family, Turnbull's.... ...30@30¢10%

Hatch, Counter:

Platform, 4 lb. by ½ oz... doz. $5.75

Two Platforms, 8 lb. by ½ oz..... doz. $16.00

Union Platform, Plain.....$1.75@2.00

Union Platform, Striped..$1.85@2.15

Chatillon's Eureka..... 25%

Chatillon's Favorite..... 40%

Chatillon's Grocers' Trip Scales..... 50%

Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c..... 50%

"The Standard" Portables 45%

"The Standard" R. R. and Wagon.... 50%

Scrapers—

Box, 1 Handle .....doz $2.25@2.75

Box, 2 Handle..... doz. $3.75@4.00

Ship, No. 1, doz. $3.50; No. 2, $3.25@3.40

Adjustable Box Scraper (S. R. & L. Co.) $6.00..... 30&10%

Screens, Window and Frames—

Bonanza Window Screens.....60@60&5%

Flyer Pattern Window Screen.60@60&5%

Maine Window Screen Frames.40&10&5%

Perfection Window Screens.....60@60&5%

Phillips' Window Screen Frames..... 50&10&5%

Porter's Extension Window Screens.. 50&10%

Wabash Spring Adj. Screen. 50%

Screw Drivers—

See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron..doz. 1 in., $3.00@3.25; 1¼, $3.50@3.75; 1¼, $4.00@4.50

Bench, Wood, Beech..doz. $3.50@2.75

Hand, Wood..... 30¢10@40%

Hand, R. Bliss Mfg. Co..... 35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99..... 30@...%

Coach and Lag, Gimlet Point, list Oct. 1, '99..... 75¢15@...%

Hand Rail, list Jan. 1, '81.60¢10@...%

Jack Screws—

Millers Falls..... 50&10&10%

Millers Falls, Roller ..... 50&10%

P., S. & W..... 40&5@40&10%

Sargent..... 70&10%

Machine—

List Jan. 1, '98.

Flat or Round Head, Iron.50@50¢10%

Flat or Round Head, Brass..... 50@50¢10%

Set and Cap—

Set (Iron or Steel) ..... 70¢10%

Sq. Hd. Cap..... 65¢10%

Hex. Hd. Cap..... 65¢10%

Wood—

List Jan. 1, 1900.

Flat Head, Iron..... 85c
Round Head, Iron..... 80c
Flat Head, Brass..... 82½c
Round Head, Brass..... 77½c
Flat Head, Bronze..... 75c
Round Head, Bronze....73½c
Drive Screws..... } Extra 10&5 @...%

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass Scythes:

Natural Finish..per doz. $7.50@7 75

Pol. Blade.....*per doz. $8.00@8.15*

Painted or Bronzed..per doz. $8.00

Weed and Bush..per doz. $7.25@7.50

Scythe Snaths—

See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise..... 25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:

Wood Hdle.,10 Awls doz. $2.00@2.25

Wood Hdle., 14 Awls, 6 Tools.... doz. $2.50@2.60

Aiken's Sets, Awl and Tools:

No. 20, ₩ doz. $10.00..... 50&10&10%

Fray's Adj. Tool H dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7..... 50%

Millers Falls Adj. Tool H'dls, No. 1, $12: No. 4, $12; No. 5, $18 .... 15&10%

Stanley's Excelsior:

No. 1, $7.50; No. 2 $4.00; No. 3, $5.50..... 30&10@30&10&10%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₩ doz..... $9.00

Nail—

Square.....*per gro. $2 50*

Round, Blk. and Pol., assorted.... gro. $1.80@2.50

Octagon.....gro. $4.25@4.75

Knurled, Good.....gro. $6.00@6.50

Buck Brothers..... 27½%

Cannon's Diamond Point, ₩ gr. $12..25%

Snell's Corrugated, Cup Pt..... 50%

Snell's Knurled, Cup Pt..... ....66⅔%

Rivet—

Regular list.....70@70¢10¢5%

Saw—

Aiken's Genuine..... ₩ doz. $5.50@6.00

Aiken's Imitation ..... ₩ doz. $3.00@3.10

Atkin's Criterion..... 40%

Atkin's Adjustable..... 40%

Bemis & Call Co.'s Cross Cut..... 30%

Bemis & Call Co.'s Plate..... 20%

Bemis & Call Spring Hammer..... 30%

Disston's Star and Monarch..... 25%

Hammer, Bemis & Call Co.'s new Pat. 45%

Morrill's No. 1, $15.00..... 40&20%

Nos. 3 and 4, Cross Cut, $23.00. 40&20%

No. 5, Mill, $31.00..... 40&20%

No. 10, $15.50..... 40&20%

No. 11, $16.00..... 40&20%

Taintor Positive, ₩ doz. $18 ..... 60%

Sharpeners Knife—

Chicago Wheel & Mfg. Co..... 80@65%

Smith & Hemenway Co ..... 70&5%

Tanite Mills ₩ gross, $14.40....25@33⅓%

Sharpeners, Skate—

Eureka Skate Sharpener..... ₩ doz. $2.00

Shaves Spoke—

Iron.....doz. $1 00@1 25

Wood.....doz. $1.75@2.25

Bailey's (Stanley R. & L. Co.)..... 50&10%

Goodell's, ₩ doz. $9.00..... 15&10%

Shears—

Cast Iron...	7	8	9 in.
Best.....	$16.00	18.00	20.00 gro.
Good.....	$13.00	15.00	17 00 gro.
Cheap....	$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:

Best quality, Jap..60¢10¢10@70¢5%

" Nickel.....60@60¢5%

Fair qual. Jap.....75¢10@80%

" Nickel.....70¢10@75%

Tailors' Shears.....40@40¢5%

Acme Cast Shears..... 40@40&5%

Heinisch's Tailors' Shears..... 40@40&5%

Wilkinson's Hedge..... 50%

Wilkinson's Sheep..... 1900 list, 50%

Tinners' Snips—

Forged Handles, Steel Blades..20¢10%

Malleable Handles, Laid with Steel. 40%

Forged Handles, Steel Blades, Berlin.. 40&10%

Jennings & Griffin Mfg. Co's. 7 to 10 inch..... 50%

Niagara Snips..... 40%

Pruning Shears and Tools—

Cronk's Pruning Shears..... 33⅓%

Disston's Combined Pruning Hook and Saw, ₩ doz. $18.00.....25@25&10%

Disston's Pruning Hook, ₩ doz. $12.00 25@25&10%

John T. Henry Mfg. Company

Pruning Shears, all grades..... 50&5%

Orange Shears..... 50&30%

Grape..... 50&10%

Tree Pruners..... 75%

Nagley's Pruning Shears..... 10&5%

P., S. & W. Co..... 33⅓@33⅓&10%

Sheaves—Sliding Door—

Stowell's Anti-Friction..... 50%

Patent Roller Hatfield's, Sargent's list, 80&10@80&10&7½

Reading..... 70&10@75%

R. & E. list..... 33⅓%

Wrightsville, Hatfield Pattern..... 80%

Sliding Shutter—

Reading list..... 70&10@75%

R. & E. list..... 33⅓%

Sargent's list..... 50&10⅓&10%

Shells—

Shells, Empty—

Brass Shells, Empty:

First quality, all gauges..... 60&5%

Climax, Club, Rival, 10 and 12 gauge.. 65&5%

Paper Shells, Empty:

Acme, Ideal, Leader, New Rapid, Smokeless 10, 12, 16 and 20 gauge. 33⅓&10%

Blue Rival, New Climax, Primrose Club, Yellow Rival, 10, 12, 16 and 20 gauge..... 15%

Climax, Club, League, Rival, 14, 16 and 20 gauge ($7.50 list)..... 20&5%

Climax, Club, League, Rival, 10 and 12 gauge..... 25&5%

Defiance, High Base, New Victor, Nitro, Repeater, 10, 12, 16 and 20 gauge..... 15%

Trap and Metal Lined, 10, 12, 16 and 20 gauge..... 33⅓&10&5%

Shells, Loaded—

Loaded with Black Powder..... 40¢5%

Loaded with Nitro Powder..... 40¢10¢10¢5%

Shoes, Horse, Mule, &c.—

Factory Shipments.

Carloads, f. o. b., Pittsburg..... $3 50

Less than Carloads, f. o. b., Pittsburg..... $3.55

Steel Shoes, 25c. per keg less

Burden's, all sizes, ₩ keg..... ..$3 60

Shot—

Drop, up to B, 25-lb. bag...$1.30@1.40.

Drop, up to B, 5-lb. bag ..... .35

Buck, 25-lb. bag..... ..$1.55@1.65

Buck, 5-lb. bag ..... .40

Chilled, 25 lb. bag..... ..$1.60@1.68

Dust Shot, 25-lb. bag.....$2.00@2.10

Dust Shot, 5-lb bag..... ... .50

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	B2, 2d Grade.
Plain Back....	$10 50	$9 60
Strap Back....	9.90	9 00
Cleveland Pat'n	10.20	9.30

	C5, 3d Grade.	D4, 4th Grade.
Plain Back....	$8.70	$8.10
Strap Back....	8.10	7.50
Cleveland Pat'n	8.40	7.80

All other sizes add 30c doz.

Black deduct 30c doz.

Note.—The above are the regular Association prices to small retailers, but are often shaded by jobbers $0.50@1.00, and Common, Plain Back Shovels are generally sold by jobbers at $5.75@7.00.

Shovels and Tongs—

Brass Head ..... 60&5@60&10%
Iron Head ..... 60&5@60&10%

Sieves and Sifters—

Hunter's Imitation, gro. $10.00@10.50

Buffalo Metallic Blued, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$12.90	$13.80	$15.00

Eclipse ..... ₱ gr. $10.00
Electric Light ..... ₱ gr. $12.00
Hunter's Genuine ..... ₱ gr. $12.50
Shaker (Barler's Pat.) Flour Sifters, ₱ doz., $2.00 ..... 30%

Sieves, Tin Rim—

Per dozen

Inch	14	16	18	20
Black, full size	$0 95	.98	1.00	1.10
Plated, full size	$1.05	1 08	1.10	1.20
Black, scant	$0.78		.80	.83

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.

Mesh 18, Nested, doz ..... $0.75@0 80
Mesh 20, Nested, doz ..... .85@ .90
Mesh 24, Nested, doz ..... 1.00@1.05

Sinks—

Cast Iron—

Standard list ..... 60@60&10%

NOTE.—*There is not entire uniformity in lists used by jobbers.*

Wrought Steel—

Columbus Galv'd and Enameled .. 60&5%
Columbus, Painted 45%
L. & G. Mfg. Co., Galvanized 50%
L. & G. Mfg. Co., Enameled 50%

Skeins, Wagon—

Cast Iron ..... 70@10@75%
Malleable Iron ..... 40@10@50%
Steel ..... 40@40&10%

Slates—

"D" Slates ..... 40@40@10%
Unexcelled Noiseless Slates ..... 60@10@10@50@10@10@10%
Wire Bound ..... 35@40@5%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Slicers, Vegetable—

Sterling ₱ 2.00 ..... 33⅓%

Snaps, Harness—

German ..... 40@40@10%

Covert Mfg. Co.:

Deroy	35&2½
High Grade	45&2½
Jockey	4 &2½
Trojan	45&2½
Yankee	35&2½
Yankee, Roller	30&2½

Covert's Saddlery Works:

Banner	60&10%
Crown	60&10%
Model	60&10%
Triumph	60&10%

W. & E. T. Fitch Co.:

Bristol	40&10%
Empire	50&5%
German	40%
National	50&5%
Perfect	45%
Clipper	50&5%
Champion	40%
Security	40%
Victor	60&5%

Oneida Community:

Solid Steel	65@65&10%
Solid Swivels	65&10@65&10&10%
Sargent's Patent Guarded	60%&10%

Snaths—

Scythe ..... 45@5@2%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Flat Ware ..... 50@10@60@10%

Miscellaneous—

German Silver ..... 60@10%

Springs—

Door—

Gem (Coil) 20%
Star (Coil) 30%
Torrey's Rod, 39 in. ₱ doz. $1.10@1.25
Victor (Coil) ..... 50&10&10%

Carriage, Wagon, &c.

Factory Shipments.

1¼ in and wider...Blk. Hf Brt. Brt.
4¼ 4½ 4¾c lb

Cliff's Bolster Springs 35%
Cliff's Seat Springs ..... ₱ pair 55¢

Sprinklers, Lawn—

Enterprise ..... 25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24 ..... 30%

Squares—

Nickel plated ..... } *List Jan. 5, 1900*
Steel and Iron ..... } ..... 70@75%
Rosewood Hdl. Try Square and T-Bevels ..... 60@10@10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40@10@40@10@10%
Disston's Try Sq. and T-Bevels ..... 60&10%
Winterbottom's Try and Miter ..... 50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.25 @$5 50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... *doz. $2.00@2.75*
Good Grade ..... *doz. $3.00@3.50*
Tinned Iron ..... *doz. $0.75@1.25*
Iron, Porcelain Lined doz. $2.90@3.25
Jennings' Star ..... ₱ doz. $1.85@1.90
King ..... ₱ doz. $2.00

Staples—

Barbed Blind ..... *lb. 8¼@8¼c*
Electricians', Association list..75&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting, Staples...per lb.. 4@4¼c
Grand Crossing Tack Co.'s list ..... 80&10%

Steels, Butchers'—

Dick's 40%
Foster Bros' 30%
C. & A. Hoffmann's 40%

Steelyards ..... 25@25&10%

Stocks and Dies—

Blacksmiths' ..... 40@40&10%
Gardner Die stocks No. 1 ..... 50%
Gardner Die Stocks, larger size 40%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates ..... 25@30%
Curtis Reversible Ratchet Die Stock .25%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $10.80 per gro., 12 inch, $12.00
Cleveland Stone Co., list Nov., '92 .. 33⅓%
Pike Mfg. Co., list '95-'96 ..... 33⅓%

Oil Stones, &c.

Chicago Wheel & Mfg. Co.:
Corundum Oil, Double Grit 50%
Corundum Axe Stones, Slips, etc 55%

Pike Mfg. Co.:

Hindostan No. 1, ₱ b	8¢	33⅓@ 33⅓&10%
Sand Stone	5¢	
Turkey Oil Stone, Extra, 5 to 8 in.	.80¢	
Turkey Slips	$1.50	
Lily White Washita	60¢	33⅓%
Rosy Red Washita	60¢	
Washita Stone, Extra	50¢	
Washita Stone, No. 1	40¢	
Washita Stone, No. 2	30¢	
Lily White Slips	90¢	
Rosy Red Slips	90¢	
Washita Slips, Extra	80¢	
Washita Slips, No. 1	70¢	
Arkansas Stone, No. 1, 3to5¼in.	$2.80	
Arkansas Stone, No. 1, 5¼ to 8in.	$3.50	

India Oil Stones 25%

Tanite Mills:
Emery Oil, ₱ doz. $5.00 ..... 50@60%

Stoners—

Cherry—

Enterprise ..... 25@30%

Stops, Bench—

Millers Falls ..... 15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%

Stops, Window—

Ives' Patent ..... 25&5%
Wilcox, Steel, per doz., $0.00 ..... 50%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Strainers Pump—

Diamond Joe Pump Strainers, per doz. 75¢

Straps, Box—

Cary's Universal, case lots ..... 20&10%

Stretchers, Carpet—

Cast Iron, Steel Points...doz. 55@65c
Socket ..... *doz. $1.75*

Strops, Razor—

Smith & Hemenway Co 70%

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co ..... 25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97 ..... 30%

Tacks Brads, &c.—

List Jan. 15, '99.

Carpet Tacks, American...90¢40@..%
American Cut Tacks ..... 90¢30@..%
Swedes Iron Tacks ..... 90¢40@..%
Swedes Upholsterers' Tacks, Gimp Tacks ..... 90¢40@..%
Gimp Tacks ..... 90¢40@..%
Lace Tacks ..... 90¢40@..%
Trimmers' Tacks ..... 90¢30@..%
Looking Glass Tacks ..... 70¢10@..%
Bill Posters' and Railroad Tack... 90¢40@..%
Hungarian Nails ..... 80¢25@..%
Common and Patent Brads.70¢10@..%
Trunk and Clout Nails...80¢10@..%

NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—

Double Point Tacks...90¢6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list ..... *50¢10@60%*

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co 30-gal. $3.20
Emerald, S. S. & Co 60-gal., $4.00
Queen City S. S. & Co., 30-gal $3.50
Queen City S. S. & Co., 60-gal $4.25

Tapes, Measuring—

American Asses' Skin ..... 40¢10@50%
Patent Leather ..... 25@5@5%
Steel ..... 40@40¢5%
Chesterman's ..... 25@25¢5%
Eddy's Steel ..... 40@40&5%
Eddy's Metallic ..... 33⅓@33⅓&5%
Keuffel & Esser Co., Steel and metallic, Lower list, 1899 ..... 35%
Lufkin's Steel ..... 33⅓@35%
Lufkin's Metallic ..... 30@30&5%

Thermometers—

Tin Case ..... 80@80&10%

Ties, Bale—Steel.

Standard Wire ..... 50&10&5%

Ties, Wall—

Cleveland Wire Spring Co.:
Galv. St el 5 32 x 6½ in. ₱ 1000..$10.00
Galv. Steel 5-32 x 8½ in. ₱ 1000..$11.00
Galv. Steel 5-32 x 11½ in. ₱ 000..$12.00
Galv. Steel 5 32 x 15½ in. ₱ 1000..$14.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White ..... 20@20&5%

Saw—

Atkins' new list 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Oneida Pattern ..... 70¢10@75¢10%
Newnouse ..... 45@50%
Hawley & Norton ..... 65&5&70%
Victor (Oneida Pattern) ..... 75@75&10%
Star (Blake Pattern) ..... 65&10@70&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes ..... 8½@9c
Mouse, Round or Square Wire ..... *doz. $0.85@1.00*
Diamond Joe Mouse Traps ..... per doz. 60¢
Diamond Joe Rat Traps ..... per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $2.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 72 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00 ..... 50%

Fly—

Balloon, Globe or Acme ..... *doz. $1.15@1.25; gro. $11.00@12.00*
Harper, Champion or Paragon ..... *doz. $1.25@1.40; gro. $13.50@15 00*

Trimmers, Spoke—

Bonney's Nos. 1 and 2 ..... 40%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 40%
Never-Break Steel Garden Trowels ..... gro. $7.00
Peace's Plastering 30%
Rose Brick and Plastering ..... 25&5%
Woodrough & McParlin, Pl'st'ring .25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list 40%
Daisy Stove Trucks, Improved pattern ₱ doz. $21.00
Model Stove Trucks ..... ₱ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galvanized Wash tubs (S. S. & Co.):

No.	1	2	3	10	20	30
Per doz	$5 25	6.00	6.75	6.50	7 25	8.00

Twine—

Binder—

Small lots f. o. b. New York, Philadelphia or Boston.
White Sisal, 550 ft. to lb., per lb. 7¼@7½c
Standard, 500 ft. to lb....per lb. 7¼@7½c
Manila, 600 ft. to lb.....per lb. 9@9¼c
Pure Manila, 650 ft. to lb. per lb. 10½c
For carloads deduct ¼c per lb.

Miscellaneous—

Flax Twine—	*BC*	*B.*
No. 9, ¼ and ½-lb. Balls	*22c*	*20c*
No. 12, ¼ and ½-lb. Balls	*18c*	*21c*
No. 18, ¼ and ½-lb. Balls	*16c*	*19c*
No. 24, ¼ and ½-lb. Balls	*15½c*	*18½c*
No. 36, ¼ and ½-lb. Balls	*15c*	*18c*

Chalk Line, Cotton, ½-lb. Balls ..... 22@22½c
Cotton Mops, 6, 9, 12 and 15 lb. to doz ..... 7@8c
Cotton Wrapping, 5 Balls to lb ..... 10¼c@..
American 2-Ply Hemp, ¼ and ½-lb. Balls ..... 12@13c
American 3 Ply Hemp, 1-lb. Balls ..... 12@13c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 9c
India 3-Ply Hemp, 1-lb. Balls 9c
India 3-Ply Hemp, 1¼-lb. Balls 8c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls ..... 10@10½c
Mason Line, Linen, ¼-lb. Balls 15c
No. 264 Mattress, ¼ and ½-lb. Balls 12c
Wool 7c

Vises—

Solid Box 50%
Bonney's Saw Vises ..... 40&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Bonney's ..... 40&10%
Fisher & Norris Double Screw ..... 15&10%
Hollands':
Machinists' 40%
Keystone 70%
Lewis Tool Co ..... 20@30%
Massey's Perfect ..... 15@20%
Massey's Clincher ..... 30@40%
Merrill's 20%
Miller's Falls ..... low list 10%
Parker's:
Victor ..... 20@25%
Regulars ..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe ..... 55@60%
Prentiss ..... 20@25%
Sargent's 40%
Simpson's Adjustable 40%
Snelliker's X. L ..... 20@25%
Stephens' ..... 20@25%
Van, W. & W. Hdw. Co 40%

Saw Filers—

Bonney's, No. 1, $13; No. 3, $16 .50&10%
Diston's D 3 Clamp and Guide, ₱ doz $30 ..... 25%
Reading ..... 40&10%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 ..... 30&10%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60%

Parker's Combination Pipe:
87 Series 60%
187 Series ..... 60&5%
No. 870 ..... 40%

Wads—Price Per M.

B. E., 11 up	*60c*	*Dis. 50&5%*
B. E., 9 and 10	*70c*	
B. E., 8	*80c*	
B. E., 7	*80c*	
P. E., 11 up	*$1.00*	
P. E., 9 and 10	*1.25*	
P. E., 8	*1.50*	
P. E., 7	*1.50*	
Ely's B. E., 11 and larger	*$1.70@1.75*	
Ely's P. E., 12 to 20	*$3 00@3.25*	

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List 40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground 65%
Unground 70%
White Enameled Ware:
Maslin Kettles 80%
Boilers and Saucepans ..... 50&10%
Tinned Boilers and Saucepans ..... 50&10%

See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99, 35%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95 ..... 40&10%
Second Quality, Agate Nickel Steel .. 65%
Second Quality, Granite ..... 70&10&70&10&10%
Iron Clad:
Tapered Ware, high list 70%
Mottled Ware, high list 75%
Never Break Enameled ..... 50&5@50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45c*	*50c*	*55c*	*65c*

Steel Hollow Ware.

Avery Spiders & Griddles ..... 65@65&5%
Avery Kettles 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles ..... 65@65&5%
Never Break Kettles ..... 60@60&10%
Solid Steel Spiders & Griddles ..... 65&5%
Solid Steel Kettles 60%
Solid Steel Ware, Enameled ..... 50&5%

Washboards—

Solid Zinc: ₱ doz
Crescent, family size, bent frame .$3.00
Red Star, laundry size, stationary protector $4.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.65
Wilson, family size, bent frame .. $2.75
Single Zinc Surface:
Naiad protector, family size, open back peforated $2.40
Saginaw Globe, protector, family size, ventilated back $2.25
Wilson, bent frame family size, ventilated back $2.25

Washers—

Leather, Axle—

Solid..... .....80&10&10@85%
Patent.....85&10@35&20%
Coil: ¾ 1 1¼ 1¼ Inch.
11c 13c 13c 15c per 100

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.60 4.70 3.60 3.20 3.00
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.

Cast Washers—

Over ½ inch, barrel lots, per lb.....
1½@1¾c

Washer Cutters—

See *Cutters, Washer.*

Washing Machines—

See *Machines, Washing.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Oil Finish.....lb. 3¼c

Weights, Sash

Per ton.....$20.00@22.50
Western Foundries make price $1@$2 lower.

Well Buckets, Galvanized

See *Pails, Galvanized.*

Wheels Well—

8-in., $1 65@1.75; 10-in., $2.00@2.10; 12-in., $2.50@2.75; 14-in., $4 25@4.40

Wire and Wire Goods—

Brt. and Ann., 6 to 9.....70&10%
Brt. and Ann., 10 to 18.....72½&5%
Brt. and Ann., 19 to 26.....75&7½%
Brt. and Ann., 27 to 36....75&10&2½%
Cop'd and Galv., 6 to 9.....66⅔&5%
Cop'd and Galv., 10 to 18.....70%
Cop'd and Galv., 19 to 26.....70&10%
Cop'd and Galv., 27 to 36.....72½&5%
Tinned, 6 to 14.....70&10&5%
Tinned, 15 to 18.....70&7&5%
Tinned, 19 to 26.....70%
Tinned, 27 to 36.....65&10%
Annealed Wire on Spools..70&5@70 &10%
Brass and Copper Wire on Spools.. 60&5@70&10%
Brass, list Feb. 26, '96.....25%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to £. 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—

Iron and Brass, list July 1, 1899.... 85&10@...%

Wire Cloth and Netting—

Galvanized Wire Netting.30&20@35%
Painted Screen Cloth per 100 ft...95c
Light Hardware Grade:
2-8 Mesh, Plain (8c. list) sq. ft.. 1¾c
2-8 Mesh, Galv. (8c. list) sq ft... 2¾c

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—

Agricultural.....70&10@75%
Case lots.....75&10%
Acme.....60&10%
Baxter's S.....60&10%
Bull Dog.....70%
Coes' Genuine.....40&10&5&5%
Coes' "Mechanics".....40&10&10&5&5%
Alligator.....60&10&10%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&5%
Combination Bright.....40%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boardman's.....33⅓%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Gem Pocket.....30%
Hercules.....70%
Knife Handle, Machinists' (W. & B.):
Case lots.....50&10%
Less than case lots.....50&5%
Improved Pipe (W. & B.).....6%
Solid Handles, P. S. & W.....50&10%
Stevenson.....60&10&10%

Wrought Goods—

Staples, Hooks, &c., list March 17 '92.....35&10@85&25%

Yokes, Neck—

Covert Saddlery Works, Trimmed.60&3%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters'.. list net

Zinc—

Sheet.....lb 6½c@7c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.. .. 7¾@ 9¾
Lead, American White, in Oil:
Lots of 500 ℔ or over.....@ 6¼
Lots less than 500 ℔.....@ 7
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....@ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price..@ 1¼
Lead White, Dry in bbls.....5½@ 6
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....℔ ℔ 4½@ 4⅝
Zinc, Paris, Red Seal, dry.....@ 8⅝
Zinc, Paris, Green Seal, dry.....@ 9⅛
Zinc, Antwerp Red Seal, dry....@ 6½
Zinc, Antwerp, Green Seal, dry..@ 7¾
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12½
Lots of less than 1 ton.....12¾@12¾
Zinc, V. M French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11¼
Lots of less than 1 ton.....11@11½
Discounts.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.

Black, Carbon.....℔ ℔ 8 @20
Black, Drop, Amer.....2½@ 4
Black, Drop, Eng.....7 @11
Black, Ivory.....15 @21
Lamp, Com.....3 @ 5
Blue, Celestial.....℔ ℔ 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine.....30 @35
Brown, Spanish.....¼@ 1
Brown, Vandyke, Amer.....1¼@ 2½
Brown, Vandyke, Foreign.....2½@ 3½
Carmine, No. 40.....℔ ℔2.05@2.75
Green, Chrome, ordinary.....5 @ 6
Green, Chrome, pure.....13 @20
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over.....@ 6
Lots less than 500 ℔.....@ 6¼
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over.....@ 6
Lots less than 500 ℔.....@ 6¼
Ocher, French Washed.....1¼@ 2½
Ocher, Dutch Washed.....4½@ 5
Ocher, American.....℔ ton $10.00@15.00
Orange Mineral, English..℔ ℔ 8½@11¼
Orange Mineral, French.....11¼@11½
Orange Mineral, German.....8¾@ 9¼
Orange Mineral, American.....7¾@ 8
Red, Indian, English.....4½@ 8½
Red, Indian, American.....3 @ 3½
Red, Turkey, English.....4 @ 6
Red, Tuscan, English.....7 @10
Red, Venetian, Amer..℔ 100 ℔. 80@1.10
Red Venetian, English.℔ ℔ .. 1.80@2.10
Sienna, Italian, Burnt and Powdered.....℔ ℔ 3½@ 9¼
Sienna, Ital., Raw, Powd.....3½@ 7½
Sienna, American, Raw.....1½@ 2
Sienna, American, Burnt and Powdered.....℔ ℔ 1½@ 3
Talc, French.....℔ 100 ℔ $1 25@1.50
Talc, American.....90 @1.10
Terra Alba, French, ℔ 100 ℔ .95 @1.00
Terra Alba, English.....95 @1.00
Terra Alba, American No. 1....85 @85
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow.℔ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer.....1½@ 2
Umber, Raw, Amer.....1½@ 2
Yellow, Chrome.....10½@25
Vermilion, American Lead.....10 @25
Vermilion, Quicksilver, bulk.. @70
Vermilion, Quicksilver, bags.....@71
Vermilion, English, Import..80 @95
Vermilion Chinese.....$1.00@1.20

Colors in Oil.

Black, Lampblack.....12 @14
Blue, Chinese.....36 @40
Blue, Prussian.....32 @36
Blue, Ultramarine.....18 @16
Brown, Vandyke.....9½@13
Green, Chrome.....10 @12
Green, Paris.....@24
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw.....9½@12
Umber, Burnt.....9½@12

Miscellaneous.

Barytes, Foreign, ℔ ton....$19.00@21.00
Barytes, Amer. floated.....19.00@20.00
Barytes, Crude.....9.00@10.00
Chalk, in bulk.....℔ ton 2.60@ 2.75
Chalk, in bbls.....℔ 100 ℔ ..@ 35
China Clay, English..℔ ton 12.00@17.50
Cobalt, Oxide.....℔ 100 ℔ 2.20@ 2.50
Whiting, Common.℔ 100 ℔ .42@ .52
Whiting, Gilders.....54@ .64
Whiting, extra Gilders'....58@ .68

Putty.

In bulk.....$1.90
In bladders.....2.40
In cans, 12 ℔ to 25 ℔.....2.50
In cans, 1 ℔ to 5 ℔.....3.60

Spirits Turpentine.

In Southern bbls.....@40¢
In machine bbls.....@40½¢

Glue.

Low Grade.....℔ ℔ 12 @15½
Cabinet.....13½@16½
Medium White.....14½@16½
Extra White.....18 @23
French.....12 @10
Irish.....13½@16

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....℔ gal. 65@68
Linseed, City, boiled.....65 @70
Linseed, State and West'n, raw 65 @64
Linseed, raw Calcutta see t.....@85
Lard, Prime.....66 @67
Lard, Extra No. 1.....50 @52
Lard, No. 1.....41 @43
Cotton-seed, Crude.....27½@28
Cotton-seed, Summer Yellow, prime.....31 @31½
Cotton-seed Summer Yellow, off grades.....30 @30½
Sperm, Crude.....@..
Sperm, Natural Spring.....@..
Sperm, Bleached Spring.....@..
Sperm, Natural Winter.....58 @59
Sperm, Bleached Winter.....63 @64
Whale, Crude.....@..
Whale, Natural Winter.....@47
Whale, Bleached Winter.....@48
Menhaden, Crude, Sound.....28 @29
Menhaden, Light Straw ned.....32 @33
Menhaden, Bleached Winter...35 @..
Menhaden, Ex Bleached Winter 38 @39
Tallow, prime.....52 @53
Cocoanut, Ceylon.....5.65@5.75
Cocoanut, Cochin.....6¼@ 6¾
Cod, Domestic.....34 @35
Cod, Newfoundland.....36 @34
Red Elaine.....35 @..
Red Saponified.....℔ ℔ 5 @ 5¼
Olive, Italian, bbls.....57½@65
Neatsfoot, prime.....52 @54
Palm, prime, Lagos.....℔ ℔ 5¼@6

Mineral Oils.

Black, 20 gravity, 25@30 cold test.....℔ gal. 9¾@10¼
Black, 29 gravity, 15 cold test. 10¾@11¼
Black, summer.....9¼@ 9¾
Cylinder, light filtered.....14¾@17¾
Cylinder, dark filtered.....11¾@16¼
Paraffine, 903-907 gravity.....12¼@12¾
Paraffine, 903 gravity.....11¼@11¾
Paraffine, 883 gravity.....9¼@10
Paraffine, red, No. 1.....12¼@12¾
In small lots ¼¢ advance.

THE IRON AGE.

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CURRENT METAL PRICES.

FEBRUARY 5, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb
1 to 1⅝ in. round and square ..... } ₩ lb 1.70@1.80¢
1¼ to 4 in. x ⅜ to 1 in..... }
Refined Iron:
1 to 1⅝ in. round and square..... } ₩ lb 1.75@1.85¢
1½ to 4 in. x ⅛ to 1 in..... }
1½ to 4 in. x ¼ to 5-16..... ₩ lb 1.90@2.00¢
Rods—⅜ and 11-16 round and square. ₩ lb 2.10@2.20¢
Angles: Cts ₩ lb
3 in. x ¼ in. and larger..... 2.00¢
3 to 3½ in. x 3-16 in..... 2.00¢
1¼ to 3 in. x ¼ in..... 2.10¢
1¼ to 2½ in. x 3-16 in. and thicker..... 2.00¢
1 to 1¼ in. x 3-16 in..... 2.10¢
1 to 1¼ x ⅛ in..... 2.20¢
⅞ x ¼ in..... 2.50¢
¾ x ¼ in..... 2.55¢
⅝ x ¼ in..... 3.20¢
½ x 3-32 in..... 3.70¢
Tees:
1 in..... 2.50¢
1¼ in..... 2.40¢
1½ in. and larger..... 2.30¢
Beams..... 2.75¢
Channels, 3 in. and larger..... 2.25¢
Bands—1¼ to 6 x 3-16 to No. 8..... ₩ lb 2.15¢
"Burden's Best" Iron, base price..... ₩ lb 3.15¢
Burden's "H. B & S. Iron, base price..... ₩ lb 2.95¢
"Ulster"..... ₩ lb 3.60¢
Norway Bars..... 4 @4½¢
Norway Shapes..... 4½@4¾¢

Merchant Steel from Store—

per lb
Bessemer Machinery..... 1.75 to 1.85¢
Toe Calk, Tire and Sleigh Shoe..... 2.00@2.50¢
Best Cast Steel, base price in small lots..... 7½¢
Best Cast Steel Machinery, base price in small lots..... 6 ¢

Soft Steel Sheets—

¼ inch.....	2¢	No. 14.....	2.50¢
3-16 inch.....	2.05¢	No. 16.....	2.60¢
No. 8.....	2.20¢	No. 18.....	2.90¢
No. 10.....	2.30¢	No. 20.....	3.30¢
No. 12.....	2.40¢	No. 22.....	3.40¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....	₩ lb, 3.05.....	3.10¢
Nos. 18 to 21.....	₩ lb, 3.15.....	3.20¢
Nos. 22 to 24.....	₩ lb, 3.25.....	3.30¢
Nos. 25 to 26.....	₩ lb, 3.35.....	3.40¢
No. 27.....	₩ lb, 3.45.....	3.50¢
No. 28.....	₩ lb, 3.55.....	3.60¢

Russia, Planished, &c.

Genuine Russia, according to assortment..... ₩ lb 10½¢
Patent Planished..... ₩ lb A, 10¢; B, 9¢, net.

Galvanized.

	B.	B.
Nos. 10 to 16.....	₩ lb, 13¢	70@70&5% off
Nos. 17 to 21.....	₩ lb, 13¢	
Nos. 22 to 24.....	₩ lb, 14¢	
Nos. 25 to 26.....	₩ lb, 15¢	
No. 27.....	₩ lb, 16¢	
No. 28.....	₩ lb, 17¢	
No. 29.....	₩ lb, 19¢	
No. 30.....	₩ lb, 21¢	

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast..... ₩ lb 15 ¢
Extra Cast..... ₩ lb 18 @ 20 ¢
Swaged, Cast..... ₩ lb 16 ¢
Best Double Shear..... ₩ lb 15 ¢
Blister, 1st quality..... ₩ lb 13 ¢
German Steel, Best..... ₩ lb 10 ¢
2d quality..... ₩ lb 9 ¢
3d quality..... ₩ lb 8 ¢
Sheet Cast Steel, 1st quality..... ₩ lb 15 ¢
2d quality..... ₩ lb 14 ¢
3d quality..... ₩ lb 12 ¢
R. Mushet's "Special"..... ₩ lb 46 ¢
" " " Annealed..... ₩ lb 75 ¢
" " "Titanic"..... ₩ lb 19 ¢
Hobson's Choice XX Extra Best..... ₩ lb 35 ¢
Jessop Self Hardening..... ₩ lb 45 ¢
Seamans' "Nelson" Steel..... 40 ¢
Hobson's "Soho" Special Self-Hardening.. ₩ lb 43 ¢

METALS—

Tin—

	Duty.—Pigs, Bars and Block. Free.	Per lb
Banca, Pigs.....		27¾@28¢
Straits, Pigs.....		27¼@27½¢
Straits in Bars.....		28¼@28¾¢

Tin Plates—

American Charcoal Plates.

Calland Grade:
IC, 14 x 20..... $6.75
IX, 14 x 20..... 8.25
Melyn Grade:
IC, 14 x 20..... 6.25
IX, 14 x 20..... 7.75
Allaway Grade:
IC, 14 x 20..... 5.50
IX, 14 x 20..... 6.60

American Coke Plates—Bessemer—

IC, 14 x 20 .....108 lb..... $4.85@4.90
IX, 14 x 20..... 5.95@6.00
IXX 14 x 20..... 7.20@7.25

American Terne Plates—

IC, 20 x 28..... $9.50
IX, 20 x 28..... 11.25

Tin Boiler Plates, American—

IXX, 14 x 26.....112 sheets..... $12.50
IXX, 14 x 28.....112 sheets..... 13.50
IXX, 14 x 31.....112 sheets..... 15.00

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake..... 17¼@17¾¢
Ansonia grade Casting..... 16¾@17¼¢

Sheet and Bolt—

January 19, 1900. Net.

Prices, in cents per pound. Sheet 24 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 24 x 60 and heavier.	32 oz. to 63 oz., 25 to 50 lb.	24 oz. to 30 oz., 18¾ to 25 lb.	16 oz. to 24 oz., 12½ to 18¾ lb.	14 oz. and 15 oz., 11 to 12½ lb.	12 oz. and 13 oz., 9½ to 11 lb.	10 oz. and 11 oz., 7½ to 9½ lb.	8 oz. and 9 oz., 6¼ to 7½ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	20½	20½	20½	20½	21½	22½	23½	26½	29½
30	96	72	20	20	20	20	20	23	26½	29½	
30	.....	96	20	20	20	20	22	26			
36	72	.....	20	20	20	20	22	24	27½	30½	
36	96	72	20	20	20	20	22	26½	29½		
36	120	96	20	20	20	20	22½				
36	.....	120	20	20	21	22					
42	72	.....	20	20	21	22	24½	27½	30½		
42	96	72	20	20	21	23	25	28½			
42	120	96	20	20	22	24	26½				
42	.....	120	20	21	23	26					
60	72	.....	20	21	22	23	26½	31½			
60	96	72	20	22	23	24	29½				
60	120	96	20	22	23	26					
60	.....	120	20	22	24	28½					
72	96	.....	20	22	23	25					
72	144	96	20	22	23	30½					
72	.....	144	21	23	28½						
108	120	.....	21	23	29½						
108	.....	120	23½	24½							
wider than 108	144	.....	24½	26½							
	.....	144	25½	28½							

Bolt Copper, ¾ inch diameter and over, ₩ lb 20½¢.
Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of sheet Copper required to cut them from.
Cold or Hard Rolled Copper, 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₩ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb..... 24½¢
12 oz. and up to 14 oz. to square foot, ₩ lb..... 25½¢
10 oz. and up to 12 oz., ₩ lb..... 27½¢
Lighter than 10 oz., ₩ lb..... 30½¢
Circles less than 8 in. diameter, 2¢ ₩ lb additional.
Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

Last March 2, 1900.

Nos.	0000 to 8 Base	9 and 10		11 and 12
		½¢		¼¢ ₩ lb adv.
Nos.	13	14	15	16
	¼¢	⅝¢	1¢	1¼¢ ₩ lb adv.
Nos.	17	18	19	20
	1¾¢	2¢	2¼¢	2½¢ ₩ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	32	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	45	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	23	23	25	27	29½₩lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1896

Brown & Sharpe's gauge standard.

Per lb.

Plain Round Tube, ⅛ in. up to 2 in.....					$0.35
" " "	⅛	"	¼	"	.36
" " "	⅛	"	⅜	"	.38
" " "	⅛	"	½	"	.41
" " "	⅛	"	⅝	"	.48
" " "	5-16	"	¾	"	.60
" " "	¼	"	5-16	"	.65
" " "	3-16	"	¼	"	1.00
" " "	⅛	"	3-16	"	1.50
Smaller than ¼ inch.....					Special
⅜ inch and larger.....					.40
Over ⅜ inch to ⅞ inch, inclusive.....					.45
Over ⅞ inch.....					.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list %..... 35%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.	in.
Wider than and including	9 12	12 14	14 16	16 18	18 20	20 22	22 24	24 26	
To No. 20 inclusive.	.22	.23	.25	.27	.29	.31	.33	.36	
Nos. 21 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37	
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38	
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39	

Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.
Wider than and including	26 28	28 30	30 32	32 34	34 36	36 38	38 40	40
To No. 20, inclusive..	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24.	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26.....	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28.....	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.
Add 1¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 20%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive....	$0.23	$0.27	$0.28
Above No. 10 to No. 16.....	.23½	.27½	.28½
No. 17 and No. 18.....	.24	.28	.32
No. 19 and No. 20.....	.25	.29	.33
No. 21.....	.26	.30	.34
No. 22.....	.27	.31	.35
No. 23.....	.28	.32	.36
No. 24.....	.30	.34	.38
No. 25.....	.32	.36	.40
No. 26.....	.35	.39	.43
No. 27.....	.38	.42	.46
No. 28.....	.42	.46	.51
No. 29.....	.45	.49	.54
No. 30.....	.48	.52	.62
No. 31.....	.51	.55	.67
No. 32.....	.55	.59	.79
No. 33.....	.59	.63	.82
No. 34.....	.64	.68	.95
No. 35.....	.70	.74	1.30
No. 36.....	.76	.80	1.50
No. 37.....	1.00	1.04	1.70
No. 38.....	1.30	1.34	2.00
No. 39.....	2.00	2.00	3.25
No. 40.....	2.60	2.60	5.75

Discount, Brass Wire, 20%; Copper Wire, Net.
List November 16, '96.
Spring Wire, 2¢ ₩ lb advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 8 in. diameter, ₩ lb, net..... 20¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₩ lb net. 21¢
Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb
Western Spelter..... 4½@4.55¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.
600 lb casks..... 6¾¢ | Per lb..... 7¾¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2¾¢ ₩ lb.

American Pig.....	4½@4¾¢
Bar.....	5¼@5½¢
Pipe.....	6¢
Tin Lined Pipe.....	12½¢ ..... 20% off
Block Tin Pipe.....	40 ¢ ..... 20% off
Sheet Lead, full rolls.....	7¢ ..... 20% off
Sheet Lead, cut.....	7½¢ ..... 20% off
Old Lead in exchange, 4½¢ ₩ lb.	

Solder.

½ & ⅓ guaranteed..... 18½@19 ¢
No. 1..... 14½@17 ¢
Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson.....	₩ lb 11¢
Hallett's.....	₩ lb 9½@10¢
U. S.....	₩ lb 9¾¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods, 13¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:
Small lots..... ₩ lb 37¢
100-lb lots..... ₩ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots..... ₩ lb 34¢
100-lb lots..... ₩ lb 33¢

Aluminum Sheet, B. & S. gauge, 50 lb or more.

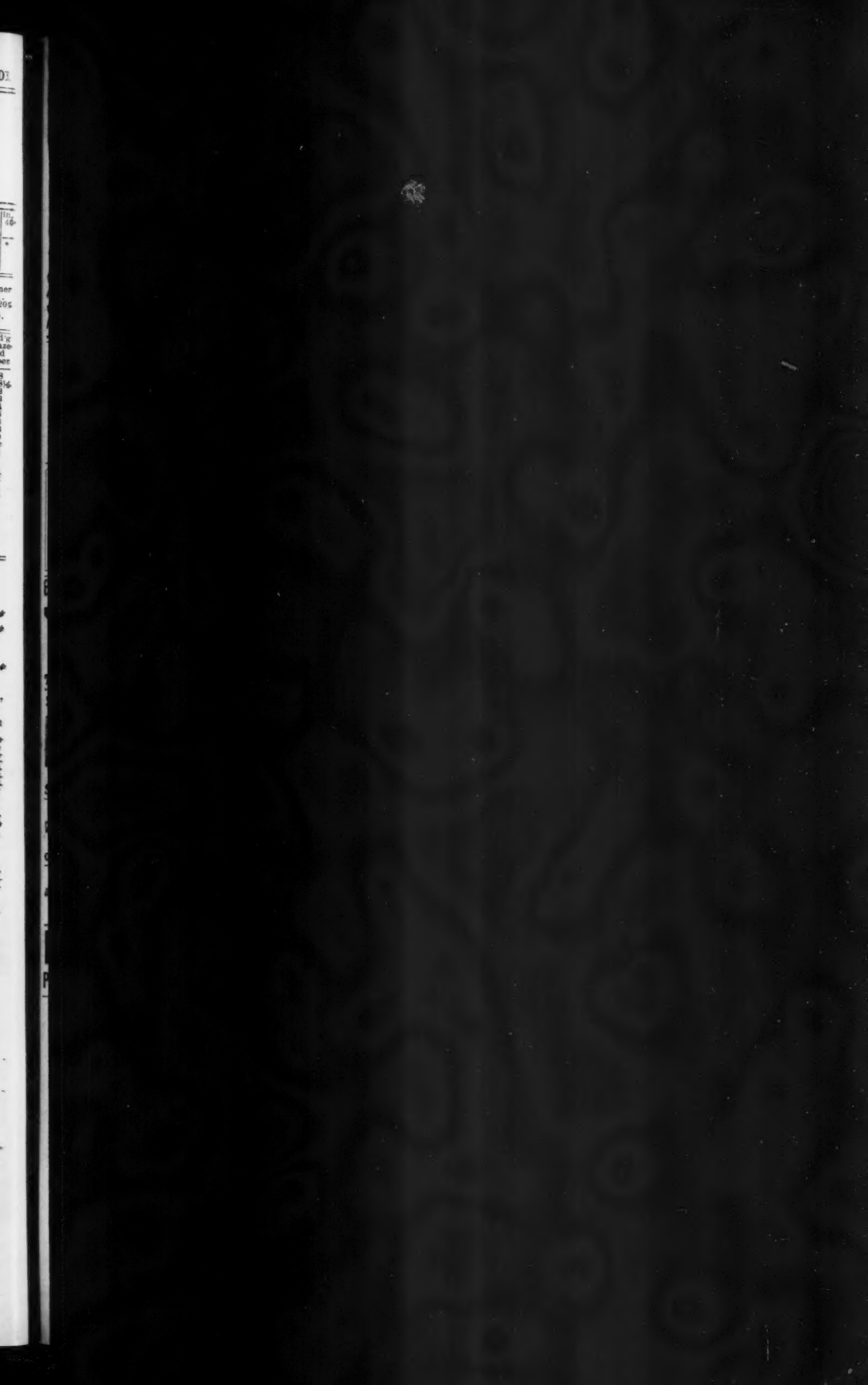
Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₩ lb.	₩ lb.	₩ lb.
Nos. 13 to 19.....	$0.42	$0.44	$0.47
No. 20.....	.44	.46	.49
Nos. 21 to 23.....	.46	.48	.51
No. 24.....	.46	.50	.53
No. 25.....	.47	.51	.54
No. 26.....	.47	.54	.59
No. 27.....	.48	.57	.62
No. 28.....	.48	.57	.64
No. 29.....	.49	.60	.69
No. 30.....	.50	.64	.77

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9.	₩ lb 40¢	No. 15.....	₩ lb 43¢
No. 9 to No. 10..	₩ lb 40½¢	No. 17.....	₩ lb 50¢
No. 11.....	₩ lb 41 ¢	No. 18.....	₩ lb 55¢
No 12.....	₩ lb 41½¢	No. 19.....	₩ lb 60¢
No. 13.....	₩ lb 42 ¢	No. 20.....	₩ lb 65¢
No 14	₩ lb 42½¢	No. 21.....	₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper.....	₩ lb	14½¢
Light and Tinned Copper.....	₩ lb	13½¢
Heavy Brass.....	₩ lb	9½¢
Light Brass.....	₩ lb	7½¢
Lead.....	₩ lb	4½¢
Tea Lead.....	₩ lb	3½¢
Zinc.....	₩ lb	3.05¢
No. 1 Pewter.....	₩ lb	17 ¢
No. 2 Pewter.....	₩ lb	9½¢
Tin Plate Scrap.....	₩ ton	$6.50
Wrought Scrap Iron.....	₩ gross ton	$10.00@.....
Heavy Cast Scrap.....	₩ gross ton	$10.00@10.50
Stove Plate Scrap.....	₩ gross ton	47.00@ 7.50
Burnt Iron.....	₩ gross ton	$5.00@ 5.50